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# INTUBATION OF THE LARYNX.

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BY

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I PROPOSE to bring forward for discussion a subject comparatively recently introduced into the domain of practical surgery—the operation of Intubation of the Larynx; and I do so because I think, from my own very limited experience of it, that it is one of distinct practical value, and one that demands a more extensive trial.

The operation as it at present exists is the one originated by Dr. Joseph O'Dwyer, of New York, and elaborated by him after a long series of experiments and considerable experience in its performance. Prior to his time various records are to be found of the introduction of tubes into the larynx for the relief of dyspnœa, but

not until now does it appear to have been taken up as a recognised substitute for tracheotomy.

In 1801, Dessault demonstrated the fact that the larynx and trachea would tolerate the presence of a cannula, by accidentally passing an œsophageal tube through the nares into the larynx, instead of into the œsophagus. He did not discover his mistake until he began to inject the fluid that was intended for the stomach. He afterwards brought this observation to practical account in the treatment of a case of dyspnœa from œdema of the glottis. He passed a catheter into the larynx, relieved the dyspnœa, and allowed the instrument to remain for a day and a half; and the patient ultimately recovered.

Trousseau, in his article on the "Treatment of Diphtheria and Croup," reports that Dieffenbach practised catheterism of the larynx in 1839.

In 1854, Dr. Horace Green, of New York, in a paper read before the New York Academy of Medicine, stated that he was able to introduce a sponge probang into the larynx and trachea, and could pass a flexible tube into either bronchus, which could be used either to relieve dyspnœa simply, or for the purpose of injecting tubercular cavities in the lung.

Bouchut, in 1858, before the Academy of Medicine at Paris, introduced an operation practised by him, which he styled "Tubage of the Larynx."

He used short cylindrical tubes hardly an inch in length, and introduced them into the aperture of the glottis by means of a sound. A silk thread attached to the tube prevented it from being inspired or swallowed, and enabled it to be withdrawn when necessary. He appears, however, to have brought the operation forward

before he was able to give satisfactory proof of its practical utility; for out of seven cases which he reported, five died, and the other two only recovered after tracheotomy had been performed.

A committee, with Trousseau at its head, was appointed to investigate the subject; and the conclusions that were arrived at after discussion seem to have so far ridiculed and condemned the operation, that Bouchut never again brought it forward, and it soon sank into oblivion.

Macewen, of Glasgow, published some cases in 1880, showing the possibility of relieving urgent dyspnœa by the introduction of a catheter into the larynx.

Other surgeons have, at different times, reported cases of tubage of the larynx; but none of them have elaborated their methods to anything like perfection, and consequently they have never become of any general value.

To-day, however, thanks to the zealous and untiring labours of O'Dwyer, intubation of the larynx is a recognised surgical procedure. He was first led to turn his thoughts in this direction, I believe, from the ill-looking statistics of his own tracheotomies; and, without any knowledge of what had been previously accomplished, he set to work in the hope of discovering some satisfactoy method of introducing a tube by the mouth.

The mortuary of the Children's Hospital in New York afforded him the opportunities for performing his experiments; and after much investigation and many devices, he has at last arrived at the conclusion that the instruments which are at present made are, at any rate, satisfactory for the purpose for which they are intended; but, at the same time, he expresses a hope that, in details, they may yet be improved upon.

The instruments as usually sent out consist of a set of five tubes, varying in length from 1¼ to 2½ inches, to suit individual cases; of an introducer, and an extractor.

Each tube is perfectly straight, and of sufficient weight to remain steadily in position. The upper extremity is flanged, to rest on the margin of the glottis, and is perforated at the anterior part by a small aperture, through which can be passed a fine string of silk, to be held in the hand during the operation. The lower extremity is elliptical in section, with the edges neatly rounded off. About its middle the tube is bulged out—a device which prevents the too ready expulsion during coughing. The interior of the tube is filled by a movable obturator, which can be screwed on to the introducing instrument above, and, projecting beyond the lower aperture below, serves to make the instrument a probe-pointed one when being inserted, thereby obviating the risk of scraping the surface of the laryngeal mucous membrane by the unprotected edge of the tube.

A small scale usually accompanies the tubes, marked with numbers that indicate the years for which the corresponding tubes are suitable.

The introducer is about the size and shape of a No. 4 silver catheter, provided with a handle; and the obturators are screwed on to a thread at its extremity. A sliding rod, worked from the handle, serves to push off the tube when it is fairly in position.

The instrument called the extractor is of ingenious device. The blades are passed *closed* into the opening of the tube, and by pressure with the thumb on a small lever they are made to separate, and to hold the tube sufficiently firmly for extraction.

To these instruments must be added a good reliable gag, working from the left side.

The following is the method of introducing the tube, which is done without an anæsthetic: The child is wrapped up in a blanket, in order to restrain the arms by the side, and is held upright as firmly as possible on the knees of a nurse or other reliable person. The nurse should sit in a straight-backed chair, and hold the child with its back firmly against her chest. An assistant from behind then holds the head of the patient, depressing the chin slightly, and at the same time taking charge of the gag, which is inserted in the left angle of the mouth and opened widely.

The operator then—sitting squarely before the child—passes his left index finger along the tongue and into the pharynx. Then, by bringing the finger forwards, the epiglottis is lifted up, and the aperture of the larynx should be distinctly felt.

The handle of the introducer is held close to the patient's chest at the beginning of the operation, and is rapidly elevated as the tube approaches the glottis. Guided by the left forefinger, the tube sinks into the aperture, and is gently pushed downwards.

When in position, the head of the tube is held by the finger, and by pushing the sliding rod of the instrument, the obturator is quickly removed. The left finger is then withdrawn, and the right hand still holds the string which is attached to the tube.

If the tube be in the larynx, and there be no complication, the child will cough honestly, it will expectorate freely, and the breathing will have lost all stridor.

If the symptoms be aggravated, the tube has most likely been passed into the œsophagus. This being so,

it should of course be immediately withdrawn by means of the string, and the operation repeated.

It is important that the introduction should be effected quickly, as respiration is practically suspended for the time being; and it is better, therefore, to make several fruitless attempts rather than one prolonged one.

Until sufficient confidence has been gained by experience, it is well to leave the string attached to the tube and looped around the ear, as the operation for the extraction of the tube is not so easily accomplished. Should the string be allowed to remain, the child should be closely watched, to prevent it either clutching it with its hand, or lifting the tube out of place by the movements of the tongue.

For the purpose of removing the tube by the extractor, the child is held in a similar position as for introduction; the gag is introduced; and the points of the extractor, guided by the left forefinger, are passed into the opening of the tube. Firm and continuous pressure on the lever above the handle is then made with the thumb, and the expanded points give sufficient hold on the tube for removal.

Just as there are dangers in the performance of tracheotomy, so there are dangers in the performance of intubation; and before discussing the relative merits of the two operations, it is only right that these faults should be fairly pointed out.

The accidents liable to occur from intubation may be thus enumerated:

1. Asphyxia may be produced by a too prolonged attempt at introduction.
2. False passages may be made by the use of too much force.

3. Membrane may be pushed into the trachea before the incoming tube.
4. Asphyxia from blocking of the tube.
5. Asphyxia from œdema crowding over the top of the tube.
6. Coughing out of the tube, followed by an immediate return of urgent symptoms.
7. Ulceration of larynx or trachea from pressure.
8. The inspiration of food into the tube, setting up pneumonia.

The first and second of these accidents may distinctly be placed under the heading of avoidable ones, and are not likely to occur in the hands of any one possessed of ordinary skill and care.

The third accident is to a great extent prevented by having the lower end of the tube made probe-pointed by the projecting obturator; and, indeed, does not occur by any means so frequently as would naturally be supposed. In fact, only five cases can I find amongst the many that are reported in which it happened. Removal of the tube in four of these cases was followed at once by the expectoration of the consolidated membrane, and in one only was death attributed to its occurrence.

O'Dwyer says that the fourth accident can never occur; for immediately there is the slightest resistance to the expired air, the tube is expelled. In a case of my own, however, secondary dyspnœa supervened from blocking of the tube. Yet, owing to extension of the disease to a lower level, the expiratory efforts were too feeble to expel it; and tracheotomy failed to gain an opening below the obstruction.

The same remarks would apply to the obstruction

caused by inflammatory swelling of the glottis around the upper opening of the tube.

The onset of urgent dyspnœa after accidental expulsion of the tube undoubtedly does happen sometimes, and cases are recorded in which a fatal issue has resulted before the surgeon could arrive in order to replace the instrument; although, to the credit of the operation, it must be owned that such unfortunate terminations are few and far between. With a properly-selected tube well in position, and the string detached, the danger of expulsion is reduced to a minimum, and it by no means necessarily follows that a paroxysm of dyspnœa will occur if it should be expelled.

Ulceration from pressure is of course just as likely to occur from an unsuitable intubation cannula as from an ill-fitting tracheotomy tube; so that with a little care the risk is obviated.

The inspiration of food into the air passages certainly gives cause for anxiety in a good many cases, according to the records of those with the largest share of experience, but personally I have not met with the difficulty; if I had, I should have relied upon nutrient enemata to supply the requisite nourishment.

In spite, however, of these unfavourable contingencies that may arise from intubation, the statistics of operations already recorded compare very favourably with those of tracheotomy. The percentage of recoveries after each operation is $26\frac{2}{5}$. Intubation has decidedly an advantage in patients under the age of five years; but above that age tracheotomy has the better record.

The following statistical table, showing the percentage of recoveries after each operation, is from a paper by

Max Stern, of Philadelphia, read at the International Medical Congress at Washington:

| | | Intubation. | Tracheotomy. |
|---|---|---|---|
| Under | 2 years ... ... | 15 per cent. | 3 per cent. |
| Between | 2 „ and $2\frac{1}{2}$ ... | 24 „ | 12 „ |
| „ | $2\frac{1}{2}$ „ „ $3\frac{1}{2}$ ... | $28\frac{7}{10}$ „ | 17 „ |
| „ | $3\frac{1}{2}$ „ „ $4\frac{1}{2}$ ... | $33\frac{7}{10}$ „ | 30 „ |
| „ | $4\frac{1}{2}$ „ „ $5\frac{1}{2}$ ... | $28\frac{3}{10}$ „ | 35 „ |
| Above | $5\frac{1}{2}$ „ ... ... | $37\frac{3}{10}$ „ | $39\frac{1}{2}$ „ |

To such a good record intubation presents certain advantages over tracheotomy:

1. The tube is worn much more comfortably by the patient.
2. The air, having to enter by the natural channels, is warmed as in normal respiration.
3. Coughing, and therefore expectoration, are more effectual.

And last, but by no means least—an advantage which is especially noticeable in private practice—the operation is not so formidable a one as tracheotomy. It can therefore be urged much earlier than the more desperate operation would be, and the consent of friends can be more readily obtained for its performance; and any method that will give equal relief, at the same time dispensing with the painful incidents of a tracheotomy in private practice, should indeed be welcome.

Such are the main data of intubation of the larynx. Whether the operation is being much practised in this country, I cannot say; but in America it has long since passed the stage of probation, and has now gained so large a share of popularity as to be practised on a scale so extensive as would only be justified by satisfactory results.

Good results undoubtedly have been attained—so encouraging, indeed, as to warrant the assumption that it may still be more successful in the future. A wide field of trial is required to elicit suggestions that will reduce the dangers to a minimum; and when that stage is reached, I certainly think we shall have at our command an operation that will possess all the advantages that tracheotomy now can offer us—one easy of accomplishment, and one that will be of unquestionable service in saving many lives.

# NOTES ON DISINFECTION.*

Revised from a Paper read before the Bristol Medico-Chirurgical Society, April 11th, 1888.

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ONE of the chief obstacles to an accurate study of disinfection-processes has, in former years, been the difficulty of deciding upon the test by which a true disinfectant should be known, as distinct from an antiseptic or a mere deodorant.

The demonstration in recent years of the actual contagium of certain specific infectious diseases, *e.g.* anthrax and tuberculosis—the, as yet, less complete demonstration of the contagious principle in others—and the extremely well-supported inference, from analogy, that the common infectious disorders all depend for causation upon specific micro-organisms, have placed in our hands a readily available and trustworthy test of disinfectant properties.

It seems now to be universally agreed that a true disinfectant must have the power of destroying all living micro-organisms and their spores—not merely that of

* For full details upon this subject consult the New Sydenham Society's vol. cxv., *Recent Papers on Disinfection;* and Dr. Parsons' *Report on Disinfection by Heat*—extracts from the *Annual Report of the Medical Officer of the Local Government Board* for 1884 (Eyre and Spottiswoode). An excellent paper by Dr. Whitelegge also appeared in the *Sanitary Record* for March, 1887.

checking their growth. The resisting properties of the various micro-organisms to chemical and other methods of disinfection vary considerably; and the most resistant bodies of all at present known are the *resting spores* of bacilli. Spore-forms may be suspected in diseases such as smallpox, the contagia of which retain their virulence for long periods of time in the dry state. It is therefore essential that a disinfectant which is to be employed against contagia of unknown, and possibly highly resistant, properties shall be able to destroy the spores of bacilli absolutely and beyond all possibility of recuperation, as shown by the failure of subsequent artificial cultivation.

It is true, as Koch points out, that for strict accuracy, it would be necessary to test a disinfectant separately against each and every form of virus which it may be called upon to destroy, and under the same conditions as in actual practice; as, though the probability is very great, it has not yet been shown to demonstration that *all* infective material is organised; and, again, it is probable that the respective organisms may be very differently constituted, and therefore very differently affected by the same reagent.

Practical experience, however, tends to show that the contagia of the common infectious diseases are less resistant than the spore-forms used in these experiments, and that, consequently, in accepting these conclusions we not only ensure complete disinfection, but obtain, in addition, a considerable margin of safety.

The subject naturally divides itself into three heads:

1. Disinfection by heat.
2. Disinfection by chemicals in solution.
3. Disinfection by chemicals in the form of vapour.

*Disinfection by Heat (Dry Heat and Steam Heat).*

The earliest experiments on heat-disinfection, as distinguished from destruction by fire, were those made by Dr. Henry, of Manchester, *circ.* 1831. His experiments consisted partly of observations on the effect of heat upon vaccine lymph, and partly of experimental attempts to infect persons and children by causing them to wear flannel clothing exposed to certain degrees of heat (a little over 200° F. for some hours) removed from "typhus" and "scarlet fever" patients. No injurious effects appear to have followed; but it was not shown that the persons experimented upon were susceptible to the infection, nor was the proof completed by causing the same persons to wear garments equally infected, but unheated. Experiments of this kind do not appear, for obvious reasons, to have been extensively followed. Passing over many and various experiments on heat-disinfection between the years 1831 and 1881, we come at length to a time when the demonstration of the part played by micro-organisms in the causation and spread of certain specific infectious diseases, and the very well-founded inference that they may play a similar part in most or all diseases of like character, had, as has been seen above, led us to the belief that, by ascertaining the action of certain modes of disinfection upon the most resistant micro-organisms, we may know when we have secured efficient disinfection.

In 1881, Koch, Wolfhügel, Gaffky, and Loeffler made various important experiments on dry and moist heat processes of disinfection, in continuation of their experiments upon the action of chemical agents.

Koch's actual process is thus described:—"Pure cultivations were obtained of species of bacteria which

are not liable to occur in accidental impurities derived from the air, and which at the same time possess striking and characteristic peculiarities. Solid cultivating material was employed in place of liquid, in order to avoid the necessity of complex precautions. Small quantities of the respective pure cultivations having been exposed to the action of disinfectants, were transferred to solid nutrient jelly or potato, and the resulting growth, if any, compared with that occurring in a control experiment which was made in every instance. By these means such complete evidence is obtained as to the vitality of the respective bacteria, both before and after disinfection, that errors are entirely excluded."

Still more recently, the experiments of Koch on heat-disinfection have been confirmed and extended in the course of an elaborate investigation by Drs. Parsons and Klein. Their experiments, made upon artificial cultures of the anthrax bacillus, upon spores of the same, upon artificial cultivations of swine fever, tuberculous pus, and upon lice, and embracing the questions of penetration into non-conducting articles, liability to injury of articles submitted to disinfection, and the degree and duration of heat necessary for disinfection, showed that—

1. The spores of anthrax bacillus were destroyed by five minutes' exposure to a heat of 212° F. in steam or boiling water; but required for destruction four hours' exposure to dry heat of 220° F., or one hour's exposure to dry heat of 245° F. The infective materials destitute of spores were completely destroyed by five minutes' exposure to steam at 212° F., or by one hour's exposure to dry heat at 220° F.

2. The penetrative power of steam into bulky or

badly-conducting articles, such as bedding, is vastly superior to that of dry heat, and is much aided by employing it under pressure, and relaxing the pressure from time to time, so as to displace the cold air in the interstices of the material.

3. Scorching occurs very readily with dry heat when the temperature at all exceeds 250° F., and white wool is soonest affected; it is especially apt to occur with radiant heat, as when the disinfecting chamber is directly heated from below. Both dry heat and steam will "fix" indelibly stains in linen or blankets soiled by discharges. Steam heat causes a certain amount of shrinkage in cloth goods, about as much as an ordinary washing; but its wetting effect is diminished by surrounding the disinfecting chamber with a steam-jacket containing steam at a higher pressure than in the interior, so as to superheat the steam in the interior chamber. Steam causes no appreciable injury, except to leather, which is entirely destroyed.

4. The objects for which disinfection by dry heat or steam is particularly applicable are such as will not bear boiling in water, *e.g.* bedding, blankets, carpets, and cloth clothes generally. When things may be boiled without injury, linen for example, this is by far the readiest mode of disinfection; the grosser dirt being first removed by preliminary soaking, and precautions being of course taken against re-infection during the process.

5. With dry heat the prolonged heating to such high temperatures (above 250° F.) caused injury to most objects submitted to the process.

6. The results obtained with steam were strikingly superior. An exposure of five minutes to steam at 212° F. was sufficient to kill the spores of the anthrax

bacillus, and one of 15 minutes to kill spores of the bacilli contained in garden earth.

7. The three important requirements for a satisfactory disinfecting machine are:

(*a*) That the temperature of the interior shall be equally distributed;

(*b*) That it shall be capable of being maintained constant for the time during which the operation extends; and

(*c*) That there shall be some trustworthy indication as to the actual temperature of the interior at any given moment, so that scorching may be avoided on the one hand, and inefficient disinfection on the other.

The directly-heated dry air chambers showed most unequal distribution of heat, variations of 100° F. being observed in different parts of the interior. Those heated by warm air currents were superior in this respect; and in the better gas-heated ones (as the Nottingham stove) the temperature is automatically regulated. But all forms of dry heat apparatus are very slow in securing the necessary penetration; the attached thermometer also, being often placed in a guarded spot, and thus sheltered, differed from the actual interior temperature in some cases by as much as 100° F.

8. Steam apparatus comply with each one of the above requirements.

### *Chemical Disinfectants in Solution.*

While, however, the labours of these enquirers have established upon a sufficiently secure basis the efficiency of heat-disinfection for those purposes to which it is applicable, the continuation of similar experiments upon

the chemical disinfectants in common use has considerably modified our views as to their value.

Thus, *carbolic acid*, 5 per cent. solution (1 in 20), took more than twenty-four hours to kill anthrax *spores* freely exposed to it, and a 3 per cent. solution took seven days; but even 1 per cent. in watery solution destroyed anthrax *bacilli*, and a little more than 1 per 1000 prevented the growth of bacilli. One part of thymol in 80,000 was found to impede the growth of anthrax spores. Carbolic oil, 5 per cent. solution, had absolutely no effect on anthrax *spores* in 110 days (upwards of three months); and even the sensitive anthrax *bacilli* were not more affected by 5 per cent. solution of carbolic acid in oil than by pure oil. The same holds good as regards thymol and salicylic acid. The alkaline carbolates and sulpho-carbolates proved to be less powerful than the pure acid, and therefore little to be relied upon as true disinfectants.

*Zinc chloride*, in 5 per cent. watery solution, had not in any way affected anthrax spores at the end of a month, and 1 per cent. failed to destroy the less resistant micrococcus prodigiosus in 48 hours, although its development was retarded thereby in 16 hours. These results are noteworthy in the case of a disinfectant which has been considered effective in solutions of 1 per 1000.

*Sulphate of iron* had little effect even in preventing ordinary putrefaction, and at the end of six days a 5 per cent. solution had not in any way affected anthrax spores.

*Chloride of lime*, in 5 per cent. solution, retarded the development of anthrax spores at the end of the first day; they were still alive after the second day, but were destroyed after five days' exposure.

*Potassic permanganate*, in 5 per cent. solution, destroyed anthrax spores in one day; but 1 per cent. solution was

ineffective after two days. It must be remembered, as Dr. Whitelegge points out, that the permanganate in the experiment constituted 5 per cent. of the whole body of liquid, and that if any non-living organic matter be present, there must be allowed sufficient permanganate to oxidise the whole of it, and to leave, *in addition*, the requisite 5 per cent. to act upon the infective material. These quantities would be very much in excess of those employed in ordinary practice.

*Mercuric chloride.*—Koch found that this salt, in the enormous dilution of 3 parts per million, entirely arrested the development of anthrax *bacilli*, and that 1 part in 5000 destroyed anthrax *spores* in ten minutes.

Mercuric chloride would therefore appear to be the best and most reliable disinfectant; and it is fortunately cheap, especially in the dilute solutions (say 1 per 2000) necessary for use. The chief drawbacks to its extended use are, the risk from its extremely poisonous character, which may be partly obviated by using litmus-coloured solutions; and the fact that in albuminous liquids, or in the presence of sulphides, it forms inert precipitates. Koch suggests that the mercury solution should continue to be added until bright strips of copper left in the liquid for half an hour show a distinct formation of amalgam, indicating the presence of at least 1 part per 5000 available mercuric chloride in solution.

*Chemical Disinfectants in the form of Vapour.*

Koch's experiments show that to ensure destruction of the spores of earth or of anthrax, exposure to *carbolic vapour* for five or six hours, at a temperature of 75° C. (167° F.), would probably be necessary. It would thus be inapplicable to the disinfection of rooms; but carbolic

vapour, with moist heat, promises good results in a special apparatus—results, however, which are equally well obtained by the use of moist heat alone. Similarly, the vapour of bisulphide of carbon destroyed the spores in two hours, at a temperature of 80° C. (176° F.)

*Sulphurous acid gas—Chlorine and Bromine gas.*—For details of the many important experiments upon the use of these reagents in disinfection, the reader is referred to the papers of Koch, Fischer, and Proskauer, in the Sydenham Society's volume, cxv. The chief results are thus summed up by Dr. Whitelegge: "Sulphurous acid signally failed to affect dry anthrax spores even when the proportion of gas was many times greater than it ever is in practice, though well-soaked spores were destroyed. In ordinary rooms the loss of sulphurous acid was found to be very rapid; and, in the absence of moisture, the effect upon even comparatively sensitive micro-organisms, such as micrococci, was *nil*, although the gas was in double and treble the usual proportion (1 lb. sulphur burnt for every 1000 cubic feet of air-space—giving theoretically 1.1 per cent. $SO_2$); and the observation extended over two days." But anthrax bacilli were quickly destroyed if exposed directly to the action of the gas in very thin layers, as, for instance, upon silk threads. "Finally, samples of anthrax spores were placed in crevices and in pockets of garments, in a room in which ten times the usual allowance of sulphur was burnt, the air being, moreover, saturated with moisture; after 24 hours' exposure, not one sample was sterilised. Baxter found that, with high concentration, sulphurous acid was more destructive to vaccine virus than even chlorine; but the proportions were far greater than those attainable in ordinary practice. With chlorine the results were considerably more

favourable; but only when the air was saturated with moisture. It appeared that in closed vessels, where the loss of chlorine is small, 0.3 per cent. destroys all organisms in three hours; but if the humidity falls short of saturation, not less than 1 per cent. is necessary. The experiments were continued in ordinary rooms, and samples of anthrax spores and other organisms were placed in crevices and in folds of clothing, as well as in the open, so as to imitate the conditions of actual disinfection. Almost all the organisms freely exposed had been destroyed, but very few of those sheltered from the gas by even a covering of blotting-paper, and none of those which lay in pockets or crevices, or beneath glass plates. The volume of chlorine generated in these experiments was theoretically 1.4 to 1.5 per cent. of the air-space; at the end of the first half-hour the proportion had already fallen to 0.4. Bromine was found to act very similarly to chlorine: 0.2 per cent. was sufficient for the destruction of anthrax spores in a closed vessel, the air being saturated with moisture." But this chemical presents no advantages, and is more costly to produce than chlorine.

## METHODS OF TRANSFERENCE OF CONTAGION FROM THE SICK TO THE HEALTHY.

It has commonly been taught, even by recent writers, that the contagious particles are capable of escaping with the water which evaporates from liquids or from moist solid surfaces, and of diffusing themselves in the air. Under this supposition, therefore, it has been readily accepted that the breath of a person suffering under an infectious disease is apt to be highly charged with the contagion, and that the exhalations from his moist skin, or from his excreta, may be highly dangerous. Nägeli,

however, has shown, apparently to demonstration, and subsequent experimenters are confirming his results, that it is extremely difficult or impossible to set free micro-organisms from moist surfaces; and it therefore appears probable that infection, when air-borne, occurs by means of contagious particles which have undergone desiccation, and which rise into the air, and remain suspended in it, in the form of fine dust. There can be little doubt that the infectious particles of a contagion leave the body mainly in the fluid secretions and excretions—the fæces, the urine, and the sweat,—and must therefore undergo desiccation before they can reach the air. They may also be attached to the solid particles of cuticle which are constantly being shed from the surface. These are already dry, and in the most favourable condition for transmitting infection, not only directly, but also by attaching themselves to articles of clothes, bedding, or furniture, or by settling upon the walls and floors of an apartment—a point of the extremest importance, as is shown by daily experience in the case of such diseases as smallpox or scarlet fever, in which desquamation of highly infectious particles is a marked feature during convalescence.

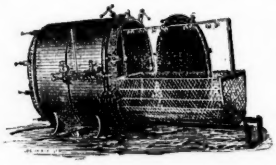
It is sufficiently obvious that linen or clothes soaked with infective secretions are peculiarly well calculated to spread infection: the contagious particles remain upon the surface of the material when it dries, and are shaken off into the air on the slightest movement—a circumstance to which washerwomen no doubt owe their liability to infection. Although disease is undoubtedly conveyed in very many instances in the above method, we must not forget the clear evidence that the germs of certain infectious diseases—notably typhoid fever and cholera—are frequently, though not always, transmitted by means of

liquids which are swallowed, and which contain the infective material. Such liquids, and milk in particular, appear also to serve as a cultivation material in which the micro-organisms multiply rapidly, in the interval between contamination and ingestion. Nor was this fact forgotten in dealing with cholera in Bristol in 1866, when absolute prohibition of possibly polluted water-supplies formed an integral part of the precautions adopted, with much success, for its suppression.*

## PRACTICAL ASPECTS OF DISINFECTION.

In dealing with the subject of disinfection practically, it is obvious that we must select a different method, according as we wish to secure disinfection of infected clothing or bedding, to render harmless infectious discharges, or to purify the interior of an infected room.

To secure the first, the use of superheated steam is seen to be at once expeditious and reliable. The apparatus in use by the Bristol Sanitary Authority is one of Washington Lyon's steam disinfectors, made by Messrs. Manlove, Alliott, and Fryer, of Nottingham. Its internal capacity is large enough to contain any sized mattress, and it is surrounded by a steam-jacket, which admits of superheating, and so drying, the steam in the central chamber. Steam is supplied from a separate boiler. The machine can be got into working order in an hour, and a roomful of bedding and clothes can be disinfected in another hour. So rapid is the working of this machine,



* *Cf.* Dr. Budd's *Asiatic Cholera in Bristol in* 1866. W. C. Hemmons, Bristol. 1883.

that more than 10,000 articles have been disinfected thoroughly during the first three months of 1888—an amount of work that, with the two gas-heated dry-air disinfectors in use here previous to 1887, would have been impossible.

During the conduct of a sick case at home, as, for instance, of scarlet fever (the home-nursing of smallpox, under ordinary conditions, I hold to be inadmissible), the necessity of dealing with infected linen is continually arising. This, as has been shown, need only be boiled to ensure complete disinfection; but, while it awaits boiling, it should be steeped in a solution either of corrosive sublimate (1 in 1000), or in carbolic acid (2 per cent.), or thymol (1 in 1000), all of which, in these strengths, have at least the power of impeding the development of, and the first of destroying, anthrax spores. The infected articles should also, for considerations above stated, be kept constantly wet until actually transferred to the boiling water. No other process that can be conducted at home, except destruction by fire, can be relied upon as an efficient means of disinfection for clothes. Fumigation by sulphur or chlorine vapour is worse than inefficient, as it tends to promote a false feeling of security.

The use of chemical disinfectants in solution is especially indicated where infectious excretions or discharges are to be dealt with. In such cases it is particularly necessary that all discharges should be *at once* received into, well mixed with, and covered by, chemicals of sufficient strength. An equal bulk of mercuric chloride solution (1 in 1000) is probably the most suitable. The discharges may then be disposed of as usual. Carbolic acid, though too feeble in its action upon resistant and spore-bearing contagia, destroys bacilli in 1 per cent.

solutions, and checks their growth in even more dilute solutions—a property which may explain the excellent results obtained by the careful use of this and other accepted disinfectants.*

During the continuance of such infectious disease in a house, it is also well to keep all drains and waste-pipes flushed with chemicals; but it must clearly be remembered that on no account should such chemicals be trusted to cover or remove drain smells in a house or street. The presence of such smells points to defective construction, and the danger will remain until reconstruction on correct principles is secured.

Public sewers, again, should be constructed so as to carry off the sewage at once to a safe point of discharge, and so to prevent putrefaction; but their systematic disinfection with chemicals in epidemic times is, doubtless, useful in checking the development of infectious material that may chance to be delayed at any part in the course of the sewer.

With regard to gaseous disinfection, the form of proceeding which is most generally convenient for the disinfection of room-spaces, the results are generally unsatisfactory. We find that while sulphurous acid is unreliable, chlorine and bromine, though more effectual, can yet only be relied upon to destroy fully-exposed organisms, and that the simultaneous saturation of the air with watery vapour is necessary to secure their full efficiency.

Dependence upon these gaseous agents for the disinfection of clothes, blankets, and similar articles is obviously fraught with extreme danger; and yet in many populous districts the local authorities responsible for the

* As *e.g.* during the cholera Epidemic of 1866: *op. cit.*

public health have no more certain means of disinfecting such articles.

When we consider that the desquamative periods of many infectious diseases, notably smallpox and scarlet fever, are periods of extreme danger, during which infective material is given off with the dried epithelial scales in a readily portable form, and during which bedding and clothes become loaded with such infectious particles; and when we further remember that this desquamation of infectious particles takes place similarly in the mildest as in the most severe cases, it becomes at once obvious that efficient means for disinfection of such articles by hot air or steam is a first necessity, and that where such efficient means are not available, contagion is likely to be largely carried by means of "fomites" —a fact that especially applies in cases where one of these diseases has been nursed for any length of time at home.

When the articles of clothing and bedding have been removed for proper treatment, there yet remains the empty room-space to consider; and we still have to secure the destruction of the disease-germs contained in the dust which adheres to the wall-surfaces, or lurks in the chinks and crannies. Theoretically, sulphur is ineffectual as a true disinfectant; practically, we have reverted to its use, after chlorine vapour had been tried for some time; and our success is uniform. Chlorine was discarded owing to its very destructive action, which caused numerous complaints.

The non-return of a disease in a certain instance, after the use of a particular process, is, as Koch points out, no proof of the destruction of the disease-germ; but the non-return of disease in infected houses after

many years' use of a process, in cases where the disease will return in the absence of disinfection, is at least some argument towards its practical utility.

It is of course possible, or it may even be said probable, that the less resistant nature of the germs of the commoner infectious diseases may explain in great part our success; but, in addition to this, the method in which disinfection is carried out has no doubt a large influence. In the first place, the window-cracks, the chimney, and the door on the outside are all carefully pasted up, so as to render the room as air-tight as possible, the proportion of sulphur burnt is large, and the operation is continued for some time. Secondly, a thorough scrubbing and free ventilation are secured: the obnoxious sulphur-smell no doubt conduces to the free securing of ventilation. And thirdly, if the patient has been nursed at home, we secure, if possible, the re-papering, liming, and thorough cleansing, in addition to fumigation, of the infected rooms. Where the patient is removed in quite an early stage, fumigation might possibly be omitted, were it not that its moral influence, as an occult process, produces good effect in impressing the nurse or friends of the patient, and in securing more ready and thorough co-operation than would be given to the ordinary and every-day process of cleansing. With these precautions, sulphur fumigation appears to me to be the least objectionable, and a fairly efficient, agent in dealing with infected spaces.

In those diseases in which desquamation of infectious particles is a marked feature, inunction with vaseline or oil, so that the body-surface is constantly moist, must prove most valuable. The action appears to be chiefly mechanical, but is most important; and repeated and thorough inunction will prevent much of the contamin-

ation of the air by infectious particles. There can of course be no objection to the use of camphor, carbolic acid, or thymol, in conjunction with the oil, and it is probably more grateful to the patient.

Similarly in such diseases, if isolated at home, the use of the wet sheet saturated and kept moist with carbolic acid solution, preferably mixed with glycerine, is useful in many ways. I believe its use is chiefly mechanical, in arresting infectious particles; but it also serves as an ever-present warning of danger, and of the necessity for continued precaution.

It is hardly necessary to point out that certain popular devices, such as the placing of Condy's fluid, or of carbolic powder, about the room in saucers, can be of no practical use so far as any hoped-for disinfectant action is concerned. As deodorants they may to some extent suffice; but fresh air, and plenty of it, is in every case of infectious disease imperative, and the use of any chemical deodorant must, in all cases, rank as of secondary importance.

### THE LEGAL POSITION OF A SANITARY AUTHORITY WITH RESPECT TO THE QUESTION OF DISINFECTION.*

It is the duty of any Sanitary Authority, when they are of opinion that the cleansing and disinfecting of any house or part thereof, and of any articles therein likely to retain infection, are necessary, to serve a notice upon the owner or occupier, requiring him to cleanse and disinfect such house or part thereof, and articles, within a time specified in the notice; and should the owner or occupier make default, he is liable to a continuing penalty of 10s. daily, and the local authority may thereupon cause the house

* For the law upon this subject, consult Dr. Hime's excellent *Practical Guide to the Public Health Act*, 1875. Baillière, Tindall, and Cox. London. 1884.

and articles to be cleansed and disinfected, and may recover the expenses summarily. Provided also that where the owner or occupier is from poverty or otherwise unable to effectually carry out these requirements, the authority may themselves cleanse and disinfect the house and articles, and defray the expenses thereof. (*Public Health Act*, 1875. Sec. 120.)

Any Sanitary Authority may direct the destruction of infected bedding, clothing, or other articles, and may give compensation for the same. (Sec. 121.)

Any Sanitary Authority may provide a proper place, with all necessary apparatus and attendance, for the disinfection of bedding, clothing, or other infected articles and may cause any articles brought for disinfection to be disinfected free of charge. (Sec. 122.)

Any person who lends, sells, transmits, or exposes, without previous disinfection, any infected bedding, clothing, rags, or other things, is liable to a penalty of £5; and any person who knowingly lets for hire, without proper previous disinfection, any house, room, or part of a house which has become infected, is liable to a penalty of £20, and to a similar penalty or to imprisonment for one month for making false statements respecting the existence of infectious disease in such house. And it is the duty of the Sanitary Authority to secure the enforcement of these penalties.

Such are the statutory duties and powers of a Sanitary Authority with regard to disinfection; but as the position of an authority in its relation to the public is untenable unless its powers are helpfully enforced, and as it is obvious that householders can have neither the knowledge nor the appliances necessary to efficiently carry out processes of disinfection themselves, it is very advisable that the

Sanitary Authority should undertake the carrying out of all such necessary disinfection upon request.

For this purpose, the Bristol Authority keep a staff of men for disinfecting purposes, who will, upon due notice, be sent, under the District Inspector's supervision, to fumigate and direct the subsequent cleansing of rooms on behalf of the owner or occupier. Similarly, the Authority have, for the convenience of the public, undertaken to send for clothes and bedding in a properly covered cart, by which the infected articles are, during transmission, secured against exposure; to disinfect them thoroughly in the steam apparatus, but not to wash them; and to return them safely. A small charge is made by the Authority for carrying out these processes of disinfection, where the applicants are in a position to pay; *but in no instance is the question of payment allowed to interfere with or to delay the necessary work.*

In conclusion, it would appear that while heat-methods have alone stood the test of accurate experiment, the other accepted methods of disinfection have been shown to be of variable and, with few exceptions, of very limited efficacy. These methods, however, when carried out with completeness and intelligence, and with due recognition of their limited power,—but only under these conditions,—are still reliable weapons in our hands; so that while, on the one hand, it behoves the authorities charged with the maintenance of the public health to provide a sufficient trained staff and the necessary appliances for carrying out processes of disinfection; it is, on the other hand, obviously to the interest of householders to entrust all necessary disinfection to their hands, so that no additional danger may be incurred through its imperfect or incomplete performance.

# MENORRHAGIA, ETC., AND HYGIENICS.

BY

JOHN MEREDITH, M.D., Edin.,

*Medical Officer of Health, Wellington, Somerset.*

(Continued from p. 27.)

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THE fact of Mrs. R. F.'s metrorrhagia being first brought on by a strain leads me to mention another case which was aggravated in that way.

I have already published the details of this case—*British Medical Journal*, 8th Nov., 1879,—and I only wish to recapitulate some of them here with the view of pointing out some features in the history of the case which have been revealed by the light of subsequent events. The outline of the case is as follows:—E. F., a young woman, aged 20, daughter of healthy parents, suffered from excessive menstrual discharge. One day in March of 1877, while she was serving as a housemaid with a family at Weston, she exerted herself in lifting a bookcase, and she was menstruating at the time. She felt the strain affecting her, and the discharge, instead of terminating at the expected time, continued to flow day after day, and in consequence she had to give up her situation. I am not in a position to say anything about the sanitary state of the house at Weston. When I saw her at her own home some little time afterwards, she seemed exhausted from loss of blood and suffering from pain in the hypogastric region.

Various means were resorted to for the purpose of arresting the hæmorrhage: among them, subcutaneous injection of ergotine, application of acid carbolic to the uterus internally, at another time of nitrate of silver—and now and again with success, at all events for the time. It is not necessary here to repeat all that was done, beyond saying that I never had a case of the kind which occupied more of my thoughts and attention. After doing all I could for the case, and finding that in spite of all the loss persisted, I desired the patient to go to Birmingham, to be under the care of Mr. Lawson Tait; accordingly, towards the end of January, 1878, she went there. Mr. Tait was not able, any more than I was, to find any organic lesion. The fundus of the uterus was a little enlarged, nothing else—no displacement of any kind.

The patient, after undergoing a few local applications to the interior of the womb, rapidly recovered, and was able to leave the Women's Hospital for a Convalescent Home on the 1st of March. After staying for a while here she returned to her home, to all appearances well. But on the very day of her return, and a few hours after her arrival, the menorrhagia returned, and persisted as it had done before, notwithstanding every effort made to arrest it; and the patient's condition was becoming critical in every sense of the word. Seeing this, I again advised her to return to Birmingham and have the uterine appendages removed, if no other means of saving her presented itself. I had been in correspondence with Mr. Tait about the case. Accordingly, on the 5th of August she was taken to Birmingham again to be under Mr. Tait's care; and on the 8th he removed both ovaries. The patient made an excellent recovery in every respect, and in due course returned to her friends. She has since

been living in domestic service and in the enjoyment of good health.

As to the condition of the ovaries, when removed they were found to be "enlarged and flabby, with traces of lymph in their neighbourhood." No other morbid appearance. That is the outline of the case, and the question which further experience and observations suggest is—Was it after all absolutely necessary to remove those appendages? At the time I thought it was; and I must take the chief responsibility for advising the patient to consent to the operation. I think now, however, that the operation should, at least, have been deferred until we should have seen what change of air, &c., would have done—until one could have seen what the effect of residence in a healthy dwelling with a supply of pure water could do. Judging from what I believe to have taken place in a case which had a great deal in common with the one under notice, the consequence probably would be an arrest of the unnatural flow and return to a state of ordinary health.

The condition of the ovaries when removed showed only that they had had an extra amount of work to do, and that of an abnormal character, and had, like any other glands, increased in size to meet the extra demand.

Psychologists at times consider it imprudent to send patients, who may have to all appearances, recovered from certain mental disorders back to their old homes, with their familiar surroundings and influences, immediately after discharge from special care; since such associations are apt to bring about relapses. There is not much difference, it seems to me, between psychical and physical influences in this connection.

The main offending element in this case was, in my

opinion, the pump-water. The uncongenial agent contained in this, finding access to the ovaries through the blood, re-kindled the slumbering susceptibility by invading the glands before they had had time to assert the independence of assured health.

I must add that at the time I was attending upon this patient I had not realised that impure water was capable of playing an all-important part in the functional economy of certain people. Further: upon making inquiries subsequently, I learnt that others, who were using this pump-water, suffered; some in like manner to this patient, the rest differently; but who did not so suffer when they had good potable water to drink.

On the 17th of July, 1883, I called to see E. F.'s father, an old man suffering from catarrhal affections, and I had a long chat with her mother at the same time. The old lady was not well either. She complained of giddiness, gastric pains, and sudden fits of epistaxis. She had had these bleedings from the nose frequently of late, and she complained of the languor so generally associated with these losses.

Enquiring into the condition of things surrounding her, I learnt that the water which she and her family had for drinking and cooking was not good. The best description of it was to call it ditch-water, for it was procured from the side of a hedge. Some months before, when she was able to get good water for potable purposes, her health was good, and she had no bleedings from the nose.

When the daughter returned to her home when first taken with menorrhagia, the only water obtainable was this water procured from the side of a hedge in a field. The family removed to another house during her illness,

which had a well with a pump fixed in it, but this well was open to pollution from soakage from a garden-plot close to, besides infiltration from a defective drain.

I adduce the mother's case to show that there is apparently a family liability to hæmorrhage.

It is often said that the climate of this Vale of Taunton Dean is "relaxing," and therefore predisposes persons to hæmorrhages of one form or another. The only explanation which I have been able to give of this alleged condition is, that the depressing cause is not necessarily in the air of the district, but rather in immediate relationship with the abodes of the persons suffering from the "relaxed" feeling. Here is a case in point, and I might give many more to the same effect.

Miss H., aged 34, informed me some years ago that when she lived in the North of England, she always felt so well. The menses recurred with regularity, and were not excessive in any way; but that as soon as she came home to her native village where her mother resided the courses became excessive, double what they should be, and lasting a week or more each time, and returning every three weeks or earlier.

Disturbance of the catamenia was one of the first discomforts she experienced after returning home. Next came hæmorrhoids, with gastro-hepatic disorders.

There was nothing in the surroundings of Miss H.'s home that could be found fault with, except that the water used was not, in my opinion, wholesome and safe. It was obtained from a well polluted by surface-drainage—in this way: the well was in the back kitchen, provided with a pump; the pump-trough stood partly over the mouth of the well, and the escape from the trough was on rough paving-stones uncemented, with an outlet

through the wall out into the orchard, and thence slowly away from the house.

One need hardly say that the pump-trough is the common receptacle of various washings, &c., and it was manifest that a certain proportion of the liquids soaked, through the pavement and the porous earth under, back into the well. This form of pump-arrangement used to be common in this district at one time, and it is not by any means wholly done away with yet.

Some time ago Miss H.'s mother died, and she left the village for another place of residence where the water supply was good, and the result has been in every way beneficial to her health. There is nothing relaxing about the climate now. In regard to the old house, the new tenant has had the defects about the mouth of the well put to rights, and that with advantage to the health of his family.

In cases of women who are peculiarly liable to hæmorrhages, those in whom it is the weak link, as it were, in the constitutional chain, in such persons almost any noxious element may prolong a menstrual course, or aggravate the flow, or, it may be, induce it out of time. I am persuaded that instances of these are far from being uncommon.

In one case a severe aggravation of the flow resulted from exposure to a leaky gas-pipe; and defective gas-taps are responsible, in my opinion, for much more suffering than is commonly imagined. So are imperfect water-closets and drains.

I have mentioned one case where I considered that impure water was the cause of epistaxis and the "out-of-sorts" feeling which the patient complained of at the same time. I have met with many such cases, and in each the inquiries made into the surroundings as affecting health,

showed that there was some serious unhealthy influence or other at work. Take one as example—this time from among the male sex.

J. H., aged 18, clerk in a warehouse, came to me in September, 1883, complaining of being weak; had lost weight lately, and suffered from frequent attacks of epistaxis; said he felt languid, and suffered from headache; was thirsty, and drank a good deal of water. The fauces were red.

He admitted that he had been exposed to bad smells —drains chiefly. He was a total abstainer from alcohol, and the water which he so freely partook of was of a suspicious quality, as it was obtained from a well liable to pollution from surface-soakage. By way of treatment, I directed him to keep away from the unhealthy odours he had mentioned; live out of doors in the open air as much as he could; and, as the water was not of a desirable nature, to drink a glass of porter with his meals once or twice a day; and, further, to take ten grains of chlorate of potash with iron thrice daily. He went away and returned in about a week, saying he was much better; had had a little bleeding once, and in a few days more he came and expressed himself as feeling all right.

In regard to the epistaxis in this case, resulting as I take it from vitiation of the blood, the Schneiderian membrane but played the part of a safety-valve to the surcharged vascular system—a gland striving to excrete foreign matter. But it was a morbid action: since the quality of the coats of blood-vessels—that is, their power to carry and retain their contents—depends upon the quality of the blood circulating in them, when this is diseased their efficiency is lessened.

In all cases of regularly recurring epistaxis, or in those

where the regularity is not immediately obvious, I have found that the sufferers were exposed to some insanitary influence or other, if not to a combination of such things.

I have notes of cases of so-called vicarious catamenia. Most of them refer to girls of 16 years old and upwards. Some suffered from more or less copious bleedings from the nose every month regularly; in others, regular periodicity did not obtain.

This sort of thing occurred in two cases for several years before the natural course asserted itself. Now as to the hygienic conditions under which these persons lived: Every one of them lived in dwellings of an unhealthy sort, or were exposed to some form of nuisance, *e.g.* drain-smells, impure water, &c. Then there were instances where the domestic habits of the family had to be taken into account, such as disregard of proper ventilation of the house and approved cleanliness.

I have often been struck with certain traits of heredity that prevail at times under these circumstances. As the mother's house is ordered, so is the daughter's, and the history, I suspect, might be carried on further still. The houses possess a sort of family smell in them, which to an outsider may be pungently perceptible, and objectionable as well; but which the family are unconscious of. Nevertheless, members of such families do not escape from the consequences of these influences; some one or other of them is often ailing, and none of them are in a bracing state of good health.

To continue my illustrations. I will briefly sketch the case of Mrs. A. It is similar to others. I made a note of the case in March, 1886. The patient was a strong woman, 40 years of age, a factory labourer. She came to Somerset from Yorkshire in the summer of 1884. Since

her arrival her catamenia had been excessive, a new experience altogether for her. A period lasted a couple of weeks or more. Her house was in the country; it seemed damp, as the floor was below the level of the road. It had some malodorous matters near the door, which she averred were due to a neighbour woman and not to herself. The water used by her and her neighbours was obtained from a well liable to pollution from surface-water.

I advised my patient to have the nuisance removed from the neighbourhood of her doorway, and have the mouth of the well better guarded, and be cleanly in other respects as well. In the way of medicines, she had some tincture of cannabis Ind., chlorate of potash with glycerine. The recommendations were acted upon, and in due course the patient's health improved, and the menses resumed their normal character.

Mrs. A.'s neighbour deserves a passing remark besides that of causing a nuisance to others living near her. This neighbour, M. F., a widow about 55 years old now, suffered from menorrhagia, with but brief intervals, for some twelve years. The flow stopped with her when she was about 53. She was under my care, off and on, during a good part of the time of her suffering. There was no tumour in the uterus, but its fundus was retroverted.

During her excessive catamenial period, while she was under my care I used every form of treatment that I could think of as likely to do good in the case, but nothing appeared to produce any lasting benefit. I had not fully realised when attending poor M. F. that hygienic conditions had so much to do as I am now persuaded they have with ailments such as hers.

During the last year or two prior to the cessation, and

occasionally before that, she was under the care of other medical practitioners; and it may, in fact, be said of her, as was said of another afflicted in a similar way something like nineteen centuries ago, "that she suffered much from many physicians." Nevertheless, however fitting the indictment, it seems to me nothing but natural to infer that she yet suffered much more from her own insanitary ways and unhealthy dwelling.

M. F. is now very much of a despondent invalid, like one whose blood-making function has been undergoing so protracted an overstrain that it has not power left to resume the normal tale of healthful action. Her daughter living at home has much of her mother's domestic ways, and suffered, when I made my report, from excess at her monthly periods. It seems to be an accepted fact among us, that "the causes of these climacteric hæmorrhages are really not known." I make this quotation from Quain's *Dictionary of Medicine*. M. F.'s case was a typical one. Every general practitioner must be familiar with many cases of the kind. In every instance where I have investigated into the condition of matters surrounding them, I have found some unhealthy influence or other at work. It may at present be too much to say that mal-hygiene is the actual cause of these hæmorrhages; but it is at least a potential one.

I would observe next that menstrual disorders of the kind I have been describing seem more prevalent in the springtime of the year, or are more accentuated in character then, than during other periods. Whether this may be due to the barometric and thermometric changes incidental to that season, I am not prepared to say; or whether *bacilli*, changing character with altered environment; or the prolific microbes of stagnant water;

or yet some other form of the bacterial entity, which is credited with entering into all forms of zymotic action, acquires an activity then, circumstances being favourable, beyond what it possesses at other times, can but be a matter of conjecture.

All this, however, is a field open to imagination, and the just exercise of imagination is as much called for in medicine as it is in physics.

Further, in common with medical practitioners following the profession in India and other places in the Tropics, I had to deal with cases of excessive menstruation, and I well remember the anxiety which I often felt concerning them. Instead of trusting so much to drugs and local applications, &c., it would be better to see to the quality of the water used; guard against pollution of the supply by surface-currents and the like, and of course against every element of an unhealthy nature.

The most serious cases of *post partum* hæmorrhage which I can call to mind were those which occurred in unhealthy houses, where the water-supply and the drainage were bad.

# Clinical Records.

## A CASE OF SUICIDAL PERFORATION OF THE STOMACH BY A RED-HOT IRON, with Remarks.

By LOCKHART STEPHENS, M.R.C.S., Emsworth (late House Surgeon to the Bristol General Hospital).

S. W., æt. 35, by trade a journeyman nailer. Admitted to the Bristol General Hospital on June 9th, 1885, at 6 p.m., under the care of Mr. Dobson, to whose kindness I am indebted for permission to publish the case.

The following history was obtained:—About two months before Christmas patient went to an Asylum at Reading, and was discharged, cured, at Christmas. He suffered from melancholia, but had never before attempted suicide. On June 9th, whilst at work forging nails, he was seen with a red-hot iron about two feet in length, the cool end of which he had against the wall, and the heated end against his belly. The iron was so hot that it ignited his apron. One of his mates ran up, gave him a push, and made him drop the iron. He said that if he was allowed to go on with his work he should be all right, and he was allowed to resume work. The iron rod was a thin one, used in making horse nails. Not long after this first attempt, he made the iron white-hot, rushed by the man who had previously stopped him in the former attempt, and again thrust the iron against his belly. The iron entered about four or five inches, according to the man who pulled it out. He was then placed on a stretcher and brought to the Hospital.

On admission, June 9th, 6 p.m., patient was suffering from severe shock; face very pale; forehead covered with large beads of perspiration; respirations very feeble, mainly thoracic in character; could answer questions; said he was not in pain. His clothes were found to be burned through, in a hole about level of umbilicus; and when removed, his shirt and undervest were stained with blood, roughly estimated at ʒij. or ʒiij. Pulse scarcely felt; extremities cold.

Immediately to right side of umbilicus, and almost entering upon right margin of that structure, was a wound, edges scorched and jagged, having the peculiar odour of burnt flesh; it measured about ⅓ inch in every diameter: thin bloody serum oozed slightly from the wound, but soon stopped.

6.15 p.m. Patient was at once placed in bed, lying flat, head low. As the pulse could scarcely be felt, 20 minims of brandy were given subcutaneously. Pulse quickened from 60 to 80 per minute. He then belched up some wind, and shortly vomited. Still very pale and sweating; skin cold and clammy. On passing hand gently over epigastrium, he experienced great pain. P. 72, very feeble. R. 9, shallow and feeble. Eyelids half closed, pupils widely dilated; roused up when spoken to. T. 98.2°. The symptoms gave no clue to the viscus injured, and as the man was much too feeble to admit of any operative interference, the wound was dressed with boracic lint soaked in carbolic lotion (1 in 20).

6.50 p.m. P. 64, very feeble again. R. 11. Ordered 15 minims of tinct. opii in brandy, ½ oz. every four hours.

8.0 p.m. Seems weaker, as if dying. Is sensible; said he would like to see his wife. Seen by the clergyman of his parish, to whom he repeated a statement which he had

made some weeks previously, to the effect that he was a scoundrel, and had been unfaithful to his wife; whereas he was a good husband, and had a small sum of money in the savings' bank. Says he is in less pain. Restless, and rolling from side to side if not prevented by nurse. Has not vomited for 15 or 20 minutes.

10.0 p.m. Constant eructation since 8.0 p.m. Vomited some brownish watery mucus about 9.30. Still very pale and sweating. P. 70, but very feeble. Respiration jerky. Gas heard coming through wound, showing perforation of bowel. He looks as if he might die at any moment.

June 10th. During the night he has been quieter; just alive and no more. Pulse can now scarcely be felt; is much weaker. Respirations very feeble indeed. Wound dressed. Gas again heard coming through wound, during dressing: odour not feculent.

1.20 p.m. Sank gradually, and died.

*Post-mortem Examination.*—June 11th, 1885. 22½ hours after death. Weather warm and dry. No signs of decomposition.

Rigor mortis marked in all joints. Hypostasis in back, buttocks, shoulders, and arms down to elbows.

Body that of a well-nourished and well-developed man, about 5 feet 9 inches in height. No abdominal distension.

In median line of anterior surface of body are two eschars: the *upper* one situated over lower part of sternum, beginning at ¼ inch from tip of ensiform cartilage, and being there ⅛ inch in width; extending upwards in median line for 2 inches, where it was ¾ inch in width; then tapering off to a scratch towards left side for another inch. The eschar involved the *skin*, but not the subcutaneous connective tissue, and was the result of the first attempt at suicide.

The *lower* one was the aperture of entrance of the hot

iron. It was situated immediately to right side of umbilicus; the edges were jagged and scorched; measuring ¼ inch in right oblique and ½ inch in left oblique diameters respectively from above downwards. It was *partially* surrounded by an eschar, which extended in median line 1 inch above and 2 inches below it, 1½ inches in left oblique diameter, and not at all to the right side.

The abdomen was then opened by incisions from tip of ensiform cartilage to pubes, so as to leave the wound and umbilicus *in situ*. At the lower part of the abdomen coils of small intestine were found, acutely inflamed to the extent that their natural lustre was dull; but lymph had not formed, nor were they adherent to one another. They were bathed on their deep aspect in dark blood, which occupied all the dependent parts of the abdominal cavity, and of which 42 ozs. were removed and measured.

The great omentum lay over the viscera as far down as the umbilicus.

On separating the parts, which were covered here with black grumous material and dark semi-clotted blood, there were seen to be two clean-cut holes in the stomach, from which the blackish material, partly stomach-contents, and blood had come, the latter being here in larger quantity than elsewhere.

From the large quantity of blood found in the peritoneal cavity, it appeared probable that some large vessel had been wounded: with great care, therefore, the diaphragm, liver, and abdominal viscera were removed *en masse* and examined. The aorta and vena cava inferior were very carefully dissected, and were all found to be intact. The bleeding, therefore, must have come from the wounds in the stomach, which on further examination proved to be correct.

*The stomach* showed two wounds. (*α*) Situated exactly on the inferior border, 2½ inches from the pyloric orifice, square in shape, measuring ½ inch in all diameters, and corresponding to the shape of the piece of iron used. The vessels on this border of the stomach were involved in the wound. This wound was the point of entrance of the iron.

(*β*) Situated on the anterior surface, immediately below the lesser curvature, 2 inches from the pyloric orifice, oblong in shape, ¾ inch by ½ inch. The mucous membrane was projecting through from within out. On dissecting out the vessels, two large branches of the *artery*—the right gastro-epiploic and pyloric branches of the hepatic artery —with its accompanying veins, ran into the upper margin of this wound.

The other organs throughout were healthy, and beyond noting their respective weights, left nothing to be recorded.

Liver, 44 oz.

Heart, 9½ oz. Quite empty.

Lungs—Right, 19 oz. } a little congested at bases.
Left, 14 oz. }

Kidneys, each 5 oz.

Spleen, 3 oz.

Brain, 52 oz. { To naked eye and on section it appeared quite normal.

*Remarks.*—This case is worthy of record both from a surgical and medico-legal point of view: the former, bearing on the nature of the injury and line of treatment to be adopted in such cases; the latter, from the rarity of such a means of self-destruction, and the difficulties which might have arisen had the body been found under circumstances which did not clearly point to suicide.

In the outset I must say definitely that at no period of the man's life did his condition, in my judgment, admit of operative interference; and in this I am supported by my friend, Mr. W. J. Penny, who saw the case on admission.

When admitted, the patient was suffering from severe *shock*, apparently the result partly of the injury inflicted, and partly of the condition of mind which led to the act. This shock, at first due to the above-named causes, was later on increased by the hæmorrhage found after death, but which I failed to appreciate during life.

Mr. Dobson, under whose care the case was admitted, but who did not see the case during life, was of opinion that abdominal section might have been done, being an advocate of the practice of early abdominal section in cases of injury of abdominal viscera and in intestinal obstruction. I may here allude to a communication by Mr. Dobson to the *Bristol Medico-Chirurgical Journal*, vol. i, 188, in which he suggests the advisability of operative interference in gastric ulcer with severe hæmatemesis. In such cases, however, it should be borne in mind, the course open to the surgeon is to a certain extent clear; for he knows the organ with which he has to deal, and within certain limits also the nature of the disease which he has to treat. Cases such as that which I have reported are, I think, not entirely analogous; for the surgeon does not know the extent or nature of the injury, or hardly the organ involved: so that to perform abdominal section for gastric ulcer would seem to be a comparatively straightforward matter, when placed beside a case of indefinite though very severe injury to some viscus not definitely known.

After a somewhat careful search through text-books

and journals, I can find no case precisely similar as regards the means whereby the injuries were inflicted. Stabs and bullet-wounds cut and tear the abdominal wall and viscera, but do not *destroy* in their course as a red-hot iron would do; and although at first sight one would have thought, as both Mr. Penny and myself remarked at the time, we ought to have no fear from hæmorrhage, because of the cauterizing effect of the hot iron; yet the *post mortem* examination showed that had any operative treatment been attempted, the source of hæmorrhage would have been one of the chief difficulties to have been overcome.

Coming now to the information to be gained from the *post mortem* examination: What light does this case throw on the great question of operation in abdominal injuries? To have opened this man's abdomen, using the aperture of entrance of the iron as the centre of an incision three or four inches long, the first thing reached would have been the great omentum, covering up the structures beneath: the transverse colon lay next to hand; and above it, somewhat out of reach of the incision, certainly above its upper extremity, was the stomach.

Supposing the stomach had been seized, and two holes, not mere cuts but holes, seen—what should have been done? I take it, the upper one should have been closed by continuous suture, and the lower one brought to the abdominal wall as in gastrostomy.

The vessels of the stomach being involved in both wounds, introduced another difficulty. From the amount of blood found in the peritoneum, I expected to find some other larger vessel wounded. The presence of the two wounds in the organ may be explained by the organ being partly distended at the time, and the probability

that the hot iron bar was thrust in obliquely, and not vertically, to the abdominal wall.

The report of this case will form one link—perhaps a weak one—in the very long chain of information which we want before rules can be laid down as to the line of treatment to be adopted in such cases. For the present I apprehend that each case has to be judged entirely on its own merits, the main points to be attended to being: the means whereby the injury was inflicted, the nature of the injuries as nearly as we can judge, the condition in which we find the patient, and the probability of success if we operate; this last depending mainly on the other three.

[N.B.—The writer's remarks on this case were written in 1885, and he has no hesitation in saying that bearing in mind recent experience in such cases, he would at once perform abdominal section.—L. S.]

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## NOTES OF OUT-PATIENT CASES.

By J. Michell Clarke, M.A., M.B. Camb., M.R.C.P. Lond.; Assistant-Physician to the Bristol General Hospital; Assistant-Lecturer on Physiology at the Bristol Medical School.

### SOME SPINAL CASES.

J. B., an exceptionally powerful and well-built man, 32 years of age, of healthy family, complained of loss of power in both legs. He had lately been engaged in deep-sea diving at a depth of 125 feet below the surface. He had always been healthy, had never had syphilis, but occasionally when off duty indulged to excess in alcoholic liquors. He had several times lost the use of his hands

for about an hour after coming out of the water. The present illness began, about three months ago, with numbness in both feet, feeling as if he had several pairs of stockings on, or was walking on a thick carpet. Since then weakness in both legs came on and gradually increased, so that he could no longer walk any distance, and was obliged to give up his work from inability to mount a ladder. He is very giddy in the dark, and cannot walk without watching his feet, as, if he stumbles against anything, he falls down and is unable to recover himself. He has never had the least pain, nor any attacks of sickness. On walking he dragged his feet along the floor with a scraping noise, and on attempting to walk fast there was marked ataxy; he had great difficulty in turning round; and on placing his feet together and closing his eyes, fell backwards if not supported.

On examination there was no wasting or rigidity of the leg muscles; the superficial reflexes were everywhere normal; the knee-jerk was distinctly present, but not active; the bicipital and tricipital tendon-reflexes were exaggerated. No loss of sensation to touch or pain could be detected, but there was some loss of muscular sense in the legs, as he did not appreciate well the change of position when his legs were passively moved. There were no paralyses. The pupils were equal, and acted both to light and accommodation. He was taken into the Hospital, and after lying in bed for some weeks he gained strength in the limbs, but the symptoms were otherwise materially the same. The functions of micturition and defecation were not affected.

Divers, as in the above case, sometimes suffer from paraplegic symptoms, which come on generally from half an hour to an hour after they emerge from the water. As

a rule only those who work at considerable depths below the surface suffer. Less severe symptoms are common among them, especially a sensation of numbness and pricking in the feet and lower part of the legs, as if they had "gone to sleep:" this affection is known amongst them as "the bends." The interesting feature of the above case was the preponderance of symptoms referable to injury of the posterior columns of the cord over the paraplegia, which gave the case considerable resemblance to tabes dorsalis, differing from the latter affection, however, in the presence of the knee-jerks, absence of lightning pains and of "crises," and of implication of the pupils. The affection of the spinal cord is doubtless produced by the high atmospheric pressure at which divers work, but in what particular way is not known. In two cases (Leyden, Schultz) quoted by Gowers, no hæmorrhages into the cord were found, but in each there was slight disseminated myelitis in the dorsal region. Moxon attributed the effect to the imperfect blood-supply to the lumbar portion of the cord; but Gowers points out that the dorsal, and not the lumbar, portion of the cord seems to be chiefly affected.

The following is one of the rare cases in which damage to the cord, not the result of injury, is entirely confined to one side. The lesion, from the suddenness of the onset and exceedingly limited distribution of the mischief, was probably a hæmorrhage. The patient, a labourer of 44 years of age, had a sudden attack of pain in the back after doing some heavy work, with loss of power in the right leg: this weakness in the right leg has continued ever since. He was a tall, thin, healthy-looking man; had had syphilis and an attack of ague when a young man, but no other illness. He used to drink too

freely, and to be careless about exposure to cold. The thoracic and abdominal organs were healthy, but the arteries showed marked thickening of their coats. He suffered from constipation and slowness of micturition. The muscles of the right leg and calf were somewhat rigid and showed fibrillar tremblings; there was no obvious wasting of individual muscles, but the right leg measured one inch less than the left in circumference. The muscles of the right leg reacted to weaker constant and interrupted currents than the left. There was no loss of sensation. Ankle- and knee-clonus was readily obtained on the right side, but on the left there was no clonus; the knee-jerk was much exaggerated on the right, and brisk on the left, side. The plantar and gluteal reflexes were absent on the right side, but present on the left, though the gluteal was only obtained with difficulty there. The epigastric, lower abdominal, and cremasteric reflexes were normal on both sides—no tenderness or other abnormality was observed over the spinal column. I saw him about eighteen months after the first visit, and the symptoms remained unchanged. The above signs indicated that the lesion was situated on the right side of the cord in the upper lumbar region.

The following are two well-marked cases of pseudo-hypertrophic paralysis in two brothers in the early stage of enlargement of muscles. There was no instance of nervous disease in the family on either the father's or the mother's side, and no other case of the kind in her own children according to the mother's statements. At my request, however, she brought the youngest boy to me, and he was found to be also affected. The first patient is a boy 8 years old; his parents are healthy, except that his mother had acute rheumatism four

years ago. His grandfather and an aunt on the father's side died of phthisis. He has two brothers and three sisters: one brother æt. 22, three sisters æt. 19, 11, 7 are all quite strong and healthy; the youngest brother, æt. 5, is also affected. No history of syphilis in the parents could be obtained. He was born two weeks before the proper time, delivery was easy; he cut his teeth without any disturbance of the general health, and has never had any illness. He was unable to walk until three years old, and inclined to fall down when placed on his legs; he has always lived in a healthy rural district of Somerset. He now complains of weakness in walking, of inability to walk any distance, and of liability to stumble and fall down, with difficulty in getting up again. He is intelligent, does well at school, and looks healthy.

He stands with the shoulders well thrown back, the head forwards, the buttocks prominent, an exaggerated concavity over the lower dorsal and lumbar spine, with the stomach thrown forward and the feet widely apart. The gait shows the characteristic oscillation from side to side at each step: and in rising from the sitting posture he first gets upon his hands and knees, then places his hands upon the thighs just above the knees, and raises them higher and higher upon the thighs, and by this means gets the trunk into the erect posture. All his movements are weak, and he finds considerable difficulty in going upstairs.

The muscles of the calves are greatly increased in size, and the flexors of the knee show next to them the greatest increase; the glutei are also enlarged, but very much less so in comparison with the above. The vastus externus shows enlargement, but the recti are smaller than normal. To the feel the hypertrophied muscles are firm, hard, and

resistant. The lumbar muscles seem weak and not well developed. The infra-spinati show great enlargement: the latissimus dorsi on each side is wasted, and there appears to be also wasting of the serratus magnus. Only the upper part of the pectoralis major is present, the lower being atrophied. The normal folds of the axillæ are therefore almost entirely absent. The atrophied muscles hardly respond at all to electrical stimulation; the enlarged muscles give diminished reaction to both the constant and interrupted currents. Both the superficial and the tendon-reflexes are sluggish and diminished in amount. The curving forwards of the lumbar spine disappears in the sitting posture, the whole spinal column then presenting a curve with the concavity forwards. When he stands, a vertical line from the scapula falls about an inch behind the buttocks. There is no loss of sensation; no giddiness; no affection of the special senses, and he walks well with his eyes shut. The muscles of the arm and forearm are not affected. The case well shows the ordinary features of the disease, especially in the marked affection of the infra-spinatus, latissimus dorsi, and pectoralis major; and I have recorded it as being a good example of a somewhat rare, though now well-known, affection.

In the second case, the younger brother of the above, æt. 5, the mother had noticed nothing wrong, and stated that he was always healthy but was very late in learning to walk, not walking till three years of age. On examination he is a healthy-looking boy, well nourished, runs and walks about well, is restless and active, readily jumping up when laid upon his back. He stands and walks, however, with his legs rather wide apart, and on examination it is seen that the calf-muscles are enlarged, hard, and firm; there

is also considerable enlargement of the flexors of the knee, and of the recti femoris and vasti externi. The glutei show less increase in size and are rather flabby. The pectoralis major is distinctly atrophied in its lower part, but not nearly to such a marked extent as in the elder brother: the latissimus dorsi is small, but shows no definite atrophy. The infra-spinatus is somewhat enlarged, more especially on the right side, but the increase in size is not great. The other muscles are normal. The arms are not affected. The knee-jerk is brisk on both sides, the superficial reflexes normal: the muscles react fairly to electrical stimulation of both kinds, but the enlarged muscles somewhat slowly.

The flexors of the knee do not very commonly show any marked increase in size in this disease—in both these cases it was very well marked, and with the picking out of the vastus externus formed a type common to the two which may indicate a family vulnerability of these muscles. In a large family one nearly always finds more than one child is affected, and the second case shows the importance of not forming a negative conclusion from hearsay evidence even after the most careful anamnesis, since, until movement becomes markedly interfered with, the changes produced by the disease are not sufficiently striking to be noticed by the lay eye. The mother was most positive in this instance that the other children were unaffected.

### DISEASE OF PULMONARY AND AORTIC VALVES, THE LESION OF THE PULMONARY BEING MOST SEVERE.

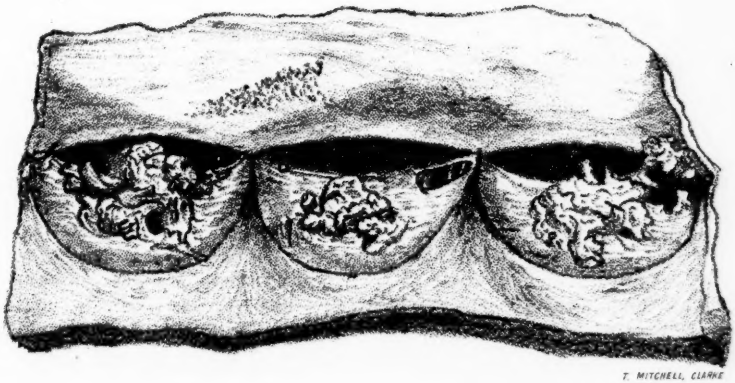
The patient was a healthy-looking man, of 40 years of age, with a somewhat anxious expression: he was a sawyer by trade. He was first seen on January 23rd, and complained of shortness of breath and swelling of the

legs, with pain and tightness of the chest. The illness began, four months previously, with a severe cold, before which time he had always been strong and healthy. On examination, the lungs were healthy, and the liver slightly enlarged. The cardiac impulse was heaving in the sixth space, two inches outside the nipple line, and there was pulsation over the fifth, sixth, and seventh spaces. A double thrill was felt at the base. The cardiac dulness began above at the third rib, and extended laterally from the right border of the sternum to about 1½ inches outside the nipple-line. A blowing systolic murmur was heard over the aortic cartilage, conducted upwards, and also a soft, blowing, diastolic murmur, conducted down the left side of the sternum, possessing the usual characters of an aortic regurgitant murmur. The second sound could also be distinguished, occurring with the diastolic murmur at the base. At the junction of the third cartilage with the sternum was heard a very musical, squeaking sound, occurring towards the end of the systole, and conducted towards the left for a short distance both upwards and downwards. At the apex was a rough, blowing, systolic murmur, audible in the axilla and at the angle of the left scapula. The diagnosis made was aortic stenosis and regurgitation and mitral regurgitation. A month later the same murmur was heard at the apex, and diastolic murmur at the base: the systolic murmur at the base was very much rougher, and a note was made that it had the characters of a friction-sound; the second sound was reduplicated, and occupying the latter third of the first sound was the same musical squeak, unaltered in character, but louder, and now heard over the greater part of the cardiac area of dulness, but not to the right of mid-sternum.

As the man grew worse, he was admitted, under the care of Dr. Markham Skerritt, who has kindly permitted me to use the results of the *post mortem* examination. He died on May 24th, the sounds remaining as above described.

At the autopsy the heart was much enlarged, weighing thirty ounces; both the right auricle and ventricle were greatly dilated, and also hypertrophied, and the pulmonary and tricuspid valves incompetent. On each segment of the pulmonary valve was an exuberant mass of granulation tissue, but no ulcerative changes; the granulation masses were about the size of one to two peas, occupying the free borders and contiguous part of the ventricular aspect, and filling up the orifice when the valve was closed. The granulations were very irregular in form, and on one segment a portion, about $\frac{1}{8}$ inch in length, attached only at one end, must have floated freely in the blood-current; they were for the most part elastic and soft, firmly attached and not friable, but in the deeper parts were hard and partly calcified. There was a small atheromatous patch on the inner lining of the pulmonary artery at its commencement. The cavities of the left side of the heart had also undergone great dilatation, and there was much hypertrophy of the left ventricle, the muscle-tissue being healthy. The mitral orifice was enlarged and incompetent, admitting easily five fingers; the valve-segments were healthy. The aortic valve was also incompetent; and on each segment was a small collection of granulation tissue, about the size of a split-pea or smaller, and occupying the centres of the free borders of the valves, harder than that on the pulmonary valve-segments, and appearing to be of older date.

On the upper part and anterior surface of the right



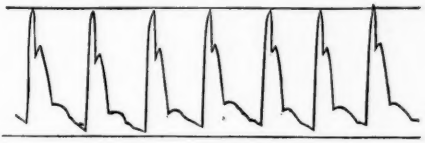

VEGETATIONS ON PULMONARY VALVES
(A little larger than natural size.)

ventricle was an elongated patch of firm, but not hard, white fibrinous material from old pericarditis, about one inch in length and $\frac{1}{3}$ inch in breadth. The pericardium contained a few ounces of fluid, and there were no adhesions. There was fluid in the pleural and peritoneal cavities, and the organs showed the usual lesions of chronic congestion.

The pulse, of which a tracing is appended, was of the water-hammer character, the dicrotic wave being feebly marked, but the arteries remaining fairly full between the beats.

PRESSURE,

3 oz.



In the presence of aortic valve-disease, and of the patch of pericarditis above mentioned, it is difficult to know which of the above murmurs could be attributed to the lesion of the pulmonary valve. I am inclined, however, to attribute the musical, squeaking sound heard at the left third cartilage to the obstruction offered to the passage of the blood by the pulmonary valvulitis, from the fact that it was heard at the first examination; while, at the second examination, the presence of a very rough systolic murmur, like a friction-sound, was noted at the base, which had not previously been heard, while the musical murmur had increased in intensity and was heard over a wider area. We may suppose that in the interval between the two examinations the pericarditis had occurred, while the pulmonary granulations had increased, and so gave rise to a louder murmur. The very musical character of the murmur, the way in which it was conducted, and its position of the greatest intensity at the

third left cartilage, are also in favour of its origin at the valve, whilst this situation is higher than that of the roughened patch on the heart's surface.

ANEURISM OF FIRST PART OF AORTA. SUDDEN DEATH FROM RUPTURE INTO THE PERICARDIUM.

The patient was a labourer, 58 years of age; a tall, strong man, rather anæmic and pasty-faced. Except for an attack of pleurisy in the left side six years ago, he had had no illness; since then, he suffered from winter-cough. He occasionally indulged freely in drink. He complained of pain in the left side and front of the chest, passing to the arms: these pains became worse after meals. There was shortness of breath on exertion, with attacks of dyspnœa of an asthmatic character, and a great deal of cough and muco-purulent expectoration. Pulse, 96 to the minute, weak, equal in both wrists.

On examination, the chest presented the usual signs of well-marked emphysema, and there was much tenderness over the sternum and front of the chest. The heart-sounds were normal; the pulmonary second sound accentuated, and its impulse in the epigastrium.

The liver was not enlarged. The arteries were everywhere markedly atheromatous, and the urine contained no albumen. He was ordered first a bismuth mixture, and then one containing potass. iodid. and extract. stramonii. He very much improved, and returned to work, apparently relieved of his symptoms, six weeks after he first came under my care. Three days later he came home drunk, sat up in bed in the night with a gurgling noise in the throat, and fell back dead. At the autopsy, the pericardium was found full of blood and recent clot; and a globular aneurism, about the size of an orange, was found arising from the posterior aspect of the first part of

the aorta, just above the sinuses of Valsalva. It projected directly backwards, immediately beneath the bronchi and main branches of the pulmonary artery, so that it had not exercised pressure on any of the surrounding structure. It was entirely limited to the first part of the aorta. The inner surface of the aneurism was exceedingly atheromatous, and on the right side perforation had occurred in the base of an atheromatous ulcer into the pericardial sac, immediately under its upper fold. The aortic valves were a little thickened and stiff, but competent, and the other valves were healthy, the heart being of the normal size.

There was emphysema of both lungs, especially marked along the anterior borders; the other organs were normal.

The case shows, like many others, that an aneurism in this situation may attain a fair size with a complete absence of physical signs, especially when there is concomitant pulmonary emphysema; and, since the most common termination is rupture into the pericardial sac, that this rupture, and consequent sudden death of the patient, may be the first sure indication of the aneurism. Attacks of dyspnœa of asthmatic character are always suspicious of aneurism, when they come on in elderly persons for the first time, especially when attended by pain in the region of the heart.

### CASE OF "ADULT CHOREA," WITH SOME SYMPTOMS OF PARALYSIS AGITANS.

The patient is a man, 64 years of age, who has been under observation now for nearly two years, without any change in the symptoms. He comes of a healthy stock. and, except for winter-cough during the last two years, has always enjoyed good health.

He was a nailmaker by trade, but was obliged to give it up thirty-three years ago. Five or six years before that

time he began to suffer from choreiform movements, which began in the left wrist, spread to both shoulders, and then to the right arm, neck, and head; at the same time the arms became weak. The movements interfered very much with his work, and thirty-three years ago the weakness increased suddenly in the right arm, so that he lost the use of it, and was never able again to make nails. After six weeks, however, he found he could do ordinary labour, and continued at work until fourteen years ago, when the weakness in the arms, shoulders, neck, and hands had increased so much as to entirely prevent it, Since that time the movements and loss of strength have steadily increased, though with extreme slowness. The patient now stands in the attitude of paralysis agitans, with an anxious, fixed, mask-like expression, the head carried forwards, the shoulders and back rounded and bent, the arms carried in front of him, flexed at the elbows; the fingers flexed at the metacarpal joints, and somewhat in position for holding a pen, but with no rolling movement of thumb on fingers.

All muscular movements are slowly performed, and in a weak and jerky manner; and the speech is monotonous.

There are constant, rather slow, choreiform movements of the head; the face is turned first to one side and then to the other, and at the same time directed upwards or downwards; or the face is raised to look directly upwards, the chin being pushed out forwards. Or, again, the head is pulled downwards directly towards the shoulder, either to the right or left, or the chin is depressed upon the sternum. At the same time there are irregular movements of the shoulders and arms, consisting of both shoulders being shrugged upwards, or the point of either the right or left shoulder raised alone; in the

arms, flexion and extension at the elbow-joint occur, the hands being now raised, now depressed. These movements are continually going on, even during sleep: when he uses his arms or hands, the movements of the head are increased. When first seen, some two years ago, fine tremor of the left forearm, with fibrillar twitching of muscles, was noted, but this has not been observed since. There is slight tremor of the head. The compensatory movements of the eyeballs during the motions of the head give almost the appearance of a slow nystagmus. On extending the arms, some tremor of a jerky character supervenes, the grasp of both hands is very weak, the left wrist is slightly dropped, and he is unable to carry anything in his left hand. The muscles of the back and of the shoulders are very weak, and seem small. The tendon-reflexes in the arms are a little exaggerated; the knee-jerks, the superficial reflexes, and the electrical reactions are normal. The legs are quite unaffected: there is no affection of sensation, of the special senses, or of the bladder or rectum.

The patient's attitude, expression, and the weakness of the back, neck, and shoulder muscles, and some of the other features of his case, suggest the presence of paralysis agitans; but the characteristic tremor and the rigidity of muscles are absent. I am not disposed to attribute the choreiform movements to the patient's former occupation, though the coincidence of the two is noteworthy; and, from his history, he seems to have suffered at one time from a nailmaker's paralysis. The movements seem to have increased, though very slightly, since the onset; and the weakness, though very slowly, steadily progresses. There seemed to be no suspicions of hysteria about the case; the man had never worked in lead; and, on the whole, the case seemed to correspond most with adult chorea.

# Reviews of Books.

*Cancer of the Uterus.* By JOHN WILLIAMS, M.D., F.R.C.P. Pp. 119. London: H. K. LEWIS. 1888.

THE pathological parts of this work, and particularly the admirable plates, form a useful, if not brilliant, contribution to our knowledge of the natural history of cancer of the uterus. Although it cannot be said that the author has been able to draw any conclusions that are either novel or beneficial from this part of his work, yet he deserves credit for having put on record a series of careful clinical and pathological studies which others following him, with more ambitious aims, may find useful.

From the practical point of view the work is not commendable. It is essentially a special plea for extirpation of the cervix, as against extirpation of the whole uterus; and has many of the usual bad features of special pleading. Examples could be shown where he is wrong as to facts; where he is partial and one-sided as to his selection of statistics; and where he is erratic or biassed in his arguments. We know a good deal of cancer of the breast. What should we say of the capacity for fair argument of a man who said that because the mortality of making a clean sweep of the whole organ with the overlying skin was greater than after the excision of one affected lobe, therefore the operation for all cancers of the breast should be excision of only the palpably diseased part? Is no account whatever to be taken of the extent of the disease? nor of the unity for disease as for function of the whole gland? Is the percentage of recurrence to be measured by the lines of an incision based on surgical or anatomical convenience, rather than by the extent of the invading disease? No reasonable man will believe that, in a given case of cancer of the uterus, recurrence is more likely to follow total removal than partial removal. These are not the lines to argue from: we must base our reasoning and our practice on the limits of the disease and on sound logic. Where removal of the cervix gives a fair chance of success, immediate and remote, let us remove the cervix; where the opposite condition holds and the operation

is proper at all, let us remove the whole uterus. If, in the great majority of cases, the minor operation is preferable, this is no reason why the major operation should be utterly condemned.

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*Inebriety: its Etiology, Pathology, Treatment, and Jurisprudence.* Pp. 415. London: H. K. LEWIS. 1888.

We commend this work to the favourable notice of our readers as a sympathetic, sensible, and scientific treatise on the whole painful subject of Inebriety. The author has evidently an extensive experience in the disease—for disease it is—and he has a special and intimate knowledge of the jurisprudence of the subject, which is treated with fulness and perspicacity. The numerous cases related are peculiarly interesting; and it is difficult to lay down the work till one has finished it. The last sentence in the preface reads: "I am also not without hope that the work may be found serviceable by my professional colleagues." We should have liked to believe that this was his chief, if not his only, motive.

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*Diseases of the Breast.* By THOMAS BRYANT, F.R.C.S. Pp. 358. London: CASSELL & CO. 1887.

We have become so much accustomed to a high degree of excellence in Cassell's Clinical Manuals, that we always expect pleasure and profit from the perusal of each new volume. This one is no exception to the rule, and in many respects is better than most of its fellows. The work is sound, practical, and up to date; it is clearly and simply written; and it is illustrated with original and well-executed lithographs and engravings. While the work is fully representative of the prevalent modern opinions of the best authorities, it is also in many respects distinctly personal. A special word of praise is merited for the clear arrangement and accurate division of the chapters, sections, and paragraphs.

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*Gonorrhœal Infection in Women.* By W. J. SINCLAIR, M.D. Pp. 143. London: H. K. LEWIS. 1888.

An authoritative and exhaustive treatise on this important subject was much needed in England, and Dr. Sinclair has done well in writing such a work. To deal with the subject

the author brings a double fitness—firstly, in a careful and thorough personal clinical study of the whole subject; and secondly, in a minute familiarity with the writings of others. From the special point of view of literature the work is beyond all praise, being presented in clear, forcible, and graceful language.

The author does well in vigorously protesting against the erroneous and inadequate views which prevail as to the gravity of this disease. In selecting Holmes's *System of Surgery* as a mark at which to point his criticism, the author has been more kind than he need have been. The remarks in the article in Holmes's *System* are erroneous and inadequate enough to deserve sharp criticism; but we could point to articles in works scarcely less well known which are worthy only of ridicule. If Dr. Sinclair's work serves to impress on the profession the fact that gonorrhœa in women is a grave disease with a far-reaching importance, not only to the individual, but to the race, it will have fulfilled its main object. But it has didactic uses in detail as well, for it deals minutely and sensibly with all clinical and practical features. Not only is it the only monograph on the subject in the English language worthy of consideration, but it is, on its own merits, a medical work of great importance and of high merit.

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*The Saliva as a test for the Functional Disorders of the Liver.* By SAMUEL FENWICK, M.D., F.R.C.P. Pp. 78. London: J. & A. CHURCHILL. 1887.

Dr. Fenwick here presents us with an elaborate physiological study of an available secretion as a means of clinically testing the manner in which an important gland, whose secretions are not available, discharges its functions. The study relates to the extremely important question of how far change in structure necessitates change of function—one which we believe to be at the root of all future progress in medicine. As guides to treatment, the very first changes in function produced by diseases as studied by the physiologist in the laboratory must supplement, if they do not supersede, the terminal ravages in the destroyed organ as placed before the pathologist.

Using the amount of sulphocyanide in the saliva as his guiding index to the activity of the liver in nutrition, Dr. Fenwick has worked out with supreme patience and great thoroughness several very important conclusions. The

results achieved in this small department of research are well worthy of study; the work is, perhaps, even more valuable as indicating a comparatively new and highly important line of investigation.

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*Comments on the Report of the Committee on M. Pasteur's Treatment of Rabies and Hydrophobia.* By Surgeon-General C. A. GORDON, M.D. Ed. Pp. 96. London: BAILLIÈRE & Co. 1888.

We had occasion last year to comment unfavourably on a work published by our author on *Inoculation for Rabies and Hydrophobia*. In that work, he says in the preface to the one before us, "he endeavoured to summarise as much of the literature of the subject as came within his knowledge." We then pointed out that this literature was of the nature found on the table of the reading-room of a general London club, and was conspicuous for its frequent references to the *Pall Mall Gazette* and the *Daily News;* and we ventured to advise our readers that the work could not be looked upon as either serious or scientific. The same criticism, though less severely, applies to the work before us. The author exhibits a strange predilection for popular as distinguished from scientific sources for his truths; and he shows a uniform and almost pitiable inability to grasp the main features of the profound problem he attacks. It is impossible to speak without respect of one who has attained to the rank and repute of Surgeon-General Gordon; in his case (as in that of so many others) it would be as well if "on the retired list" could be applied to science as well as to soldiering.

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*Ophthalmic Surgery.* By R. BRUDENELL CARTER, F.R.C.S., and W. A. FROST, F.R.C.S. London: CASSELL & Co. 1887.

The book before us well maintains the excellent reputation of *The Clinical Mannals for Practitioners and Students of Medicine.* Our authors are well-known ophthalmic surgeons, thoroughly competent to write upon their speciality, both from large practical experience and from wide literary knowledge of it.

This volume is very readable. Its contents are arranged in fifteen chapters, for each one of which one of the authors is responsible; but the whole work has been submitted to both.

Full use has been made of the space at their command; each chapter is complete in itself, and little of importance appears to be omitted: a copious index gives easy reference to particular points.

The scope of medicine is so wide, that the student does well if in his academical career he gain a really sound grasp of its general principles, together with a good knowledge of anatomy and physiology. But the practitioner has to deal with disease in all its varied forms, and patients with eye trouble will assuredly come for advice. The eye is an organ of no less importance than many others, and some knowledge of the diseases to which it is specially subject is very soon found to be essential.

Unhappily it too often occurs that where no evident lesion presents itself, and even where definite inflammation exists, eye cases are diagnosed as "constitutional," and are treated on general principles, no special attention being given to the organ affected: prescriptions are written for the neuralgia or rheumatism, while the eye is being spoiled by insidious iritis or glaucoma.

Our authors have produced a book which any senior student could read and understand; it is very well suited to the needs of the practitioner, and may be recommended as a sound introduction to the study of ophthalmic surgery.

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*Gout, and its Relations to Diseases of the Liver and Kidneys.* By ROBSON ROOSE, M.D. Fifth Edition. London: H. K. LEWIS. 1888.

In September, 1885, we called attention to an earlier edition of this work. We have now the fifth edition. The results of the author's recent experiences have been added, and the book gives a convenient presentation of the various theories held in connection with the subject.

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*Diseases of the Skin.* By W. ALLAN JAMIESON, M.D., F.R.C.P. Ed. Edinburgh: YOUNG J. PENTLAND. 1888.

Dermatologists rarely get such an *édition de luxe* as this volume, which will still further enhance the reputation of its publisher. The book is charmingly printed. Its essentially

practical character will do much to drive away the thought that will come into the minds of many—that surely another general book on skin-diseases was not wanted. Enough etiology and pathology are given without being a burden to the enquirer, and the latest therapeutics of the skin are well recorded. Taking into consideration the marked idiosyncrasies of skin-diseases and their possessors, perhaps there is scarcely enough detail of alternative treatment to satisfy a bewildered doctor, who finds ordinary modes of attack unsuccessful. This is more particularly the case in reference to parasitical diseases. The coloured illustrations show much care in their preparation, and have the advantage of being less unlike the actual life-appearances than most of such productions. If the practitioner's library is to contain only one book on diseases of the skin, it would be well furnished with this book. It does not slavishly follow recognised authorities, is far from being a compilation from other writers, and is largely based on the author's personal experience at Edinburgh.

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*Pocket Therapeutic Notes.* Pp. 157. FERRIS & Co., Bristol. 1888.

This is an exceedingly handy and useful little work, containing a complete list of all new drugs and remedies, with full and clear descriptions of their therapeutic action. The alphabetic arrangement renders the finding of any remedy very easy; and the copious references to the leading authorities who have introduced or tried the various remedies assist further study where this is desirable. The labour which must have been expended in the preparation of these notes is scarcely suggested by the small size of the book; a peep inside the covers will show how much information can be given in very small space.

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# Notes on Preparations for the Sick.

**Aerated Distilled Water. Sweet Coated Pills.**—B. KEEN, Bristol.

The **Distilled Water** is bright and sparkling, put up in champagne bottles, and sold at a nominal price. The popularity of the various spas, British and foreign, may be considered to indicate the importance of water as a medicinal agent. When we contemplate the difficulties in the way of excretion where the kidneys are in a pathological state, when we observe the various discomforts dependent on deficient hepatic activity, and when we meet with cases where a glass of Burgundy invariably gives rise to pains, or when a glass of bitter ale is poison and stout a still more potent one, we begin to realise the possibility of a therapeutic value in distilled water. The necessity for a thorough flushing of the tubes and channels of the tissues does not at first sight appear to be urgent; but when we think of the condition of the blood and tissues at such time as when a gouty attack is imminent, it is clear that the excretory function does need the assistance of a solvent in profusion which will wash away the tissue *débris* accumulating and being deposited in the interstices. What better solvent is possible than distilled water? and, it being contrary to the instincts of civilised human nature to take any fluid in profusion which is not retailed at a given price from a bottle, this prepared distilled water will comply with the required conditions and become acceptable. The suggestive champagne bottle may give the contents a borrowed charm which may add to the therapeutic activity.

The **Pills** have the newly discovered sweetening agent, saccharine, used in small quantity in the coating, giving them a sweetish taste. The coating is easily soluble: all the Pharmacopœia pills are kept in readiness, and eighty-seven other formulæ comprise the list of those kept in stock: any of

these can be dispensed without delay. They appear to be a distinct advance on all other kinds of coated pills, and are not more expensive than those of other pill manufacturers.

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**Essence of Beef. Concentrated Beef Tea. Meat Lozenges.**—GEO. MASON & CO., LIMITED, London.

The **Essence of Beef** appears to be of good quality; it is prepared from British meat, and consists solely of the juices of the meat, entirely free from water or any other added matter. It is entirely free from fatty matter, is clear, palatable, and nutritious: no water should be added, but it should be taken in teaspoonful doses as a jelly. The price of this Essence compares very favourably with that of the numerous other varieties of beef essence of other makers.

The **Concentrated Beef Tea** in skins forms a ready method of making good beef tea in an emergency: it is merely necessary to cut off a portion and dissolve it in boiling water, which may be done in one minute.

The **Meat Lozenges** are a portable nourishment in a most convenient form for invalids and travellers.

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**Lloyd's Universal Food. King's Cooked Oatmeal. King's Wheaten Food.**—GEORGE KING & CO., London.

As a food for invalids, weakly children, and delicate persons, the **Universal Food** is said to be unsurpassed. It is described as consisting "of the most nutritious and finest selected cereal grains and pulse, combined with the active constituents of pure fresh malt meal, in such proportions as to render the mixture as nearly as possible chemically identical with the constitunets of the human body itself." It is said to be prepared from the formula of Dr. Domett Stone; but the prescription is withheld, and therefore we are not informed of the details of its composition. The process of cooking adopted in its manufacture is far from efficient, inasmuch as the starch-granules are for the most part unbroken and are commonly grouped together within the original unbroken cell-walls of the vegetable tissue: it must therefore be

submitted to further heat before it can be suitable food for those who are unable to digest raw starch.

The **Cooked Oatmeal** is said to have the great advantage that "it requires only one moment's boiling, and having been previously perfectly cooked it is more digestible than ordinary oatmeal prepared in the usual somewhat tedious manner." Everyone knows the value of oatmeal, which is now as familiar on the breakfast table of the English as it formerly was on that of the Scotch and Irish only: the time necessary for its preparation has been the great objection to its daily use.

We have examined this preparation microscopically, and find that the starch-granules are free, but have not been broken up: they do not show any evidence of the action of heat. The powder must therefore be boiled before it can become an easily-digested and nutritious food. We do not doubt that this preparation is more quickly cooked and more easily assimilated than the ordinary oatmeal; but on the other hand, we question if the aperient action of the ordinary crushed oatmeal is retained by the more digestible, less irritating, and therefore more nutritious preparation.

The **Wheaten Food** is prepared solely from the finest wheat, and contains the most nutritive portions of the grain: it is free from any chemical addition, and "is thoroughly cooked by an improved patent process, which renders it more digestive than when cooked by the ordinary methods." We know not what this process of cooking may be, but the powder under the microscope shows the entire starch-grains uncooked, uncracked, and uninfluenced by heat: it must therefore be well boiled before it can become suitable food for infants, otherwise the starch grains will pass through the alimentary canal undigested and have little nutrient value.

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**Dr. Michaelis' Tonic Cocoa.**—KUHNER, HENDSCHEL & Co., London.

This is prepared by Messrs. Stollwerck Brothers, of Cologne, from pure cocoa and soluble extract of acorns. It is said to be a most efficacious remedy for catarrhal affections of the digestive organs, and is increasingly used as a substitute for coffee, tea, or chocolate.

**Griffin's Nutritive Suppositories.**—A. W. GRIFFIN, Bath.

Since the introduction of peptonising agents into daily practice, the methods of feeding by rectum have been greatly improved; and there is this advantage with regard to rectal feeding, that a bitter taste in the product is immaterial. Many patients strongly resist our efforts to improve their nutrition by the use of peptonised foods in the natural way; but we hold that all food given by the rectum should be rendered ready for absorption by the use of peptonising agents. We have the choice between fluid enemata and solid suppositories; sometimes the one will be the better, but sometimes the other. As a rule, we believe that the fluid form is the best; and peptonised milk, with various additions according to necessity, leaves little to be desired. When, however, the rectum is irritable and refuses to retain fluids, or when the patient has an objection to the administration of the ordinary fluid enema, the solid suppository becomes indispensable and invaluable. These prepared nutritive suppositories do away with all the difficulties in the preparation of peptonised enemata: they melt at the temperature of the body, and the melted product is easily, completely and slowly absorbed. Each suppository weighs two drachms, and is equal in nutritive value to four ounces of good beef tea. They are readily introduced, do not irritate the rectum, and are retained when fluid injections come away. The difficulties associated with persistent rectal feeding are much diminished by the use of such solid concentrated nutritive suppositories as those under notice.

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**Liq. Podophyllin (Hockin).**—HOCKIN, WILSON & Co., London.

The profession is well alive to the superior value of fluid preparations of this drug. The solution of the resin in spirit with tincture of ginger, first suggested by Dr. Dobell, more recently the tincture of the Pharmacopœia, have convinced the observant that the drug in fluid form is less likely to give rise to griping pains and the other violent effects which now and then follow the administration of ordinary doses in pills. The cholagogue action is more easily obtained with a less violent aperient result and with more uniformity of action with the fluid tincture, than is the case with the resin given

in pills. The liquor prepared by Hockin, Wilson & Co. has the advantage of being easily miscible with water, acid or alkaline solutions, ethers, infusions, &c.; there is also the advantage that it manifests little or no aperient action. We have given this preparation in drachm doses three times daily, also in two-drachm doses each night, with no aperient result: whether the cholagogue action is in any degree impaired by the abstraction of the aperient elements of the podophyllin is not easy to prove: patients have improved whilst taking it, but they have generally also taken a saline aperient in the morning. One drachm is stated to be equal to a quarter grain of the resin: we doubt if the therapeutic effect of the two substances can be spoken of as equal, inasmuch as the resin is sometimes too active an aperient; but the liquid in corresponding dose has no such action.

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**Pulv. Pepsinæ Comp.**—T. Buxton, Bristol.

Each twenty-grain dose of this power contains three grains of pepsine in concentrated form, with pancreatine and diastase, in combination with hydrochloric and lactic acids.

Such a tridigestive powder as this should be of use in various indefinite conditions of abnormal digestion. It must often be the case that, if one fluid is deficient in digestive power, the others will also be defective; for instance, in cases of anæmic dyspepsia, where the impoverished condition of the blood is likely to affect the quality of all the digestive juices. The powder is designed to aid such conditions as this, and we have not been disappointed with the results obtained by its use.

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# PERISCOPE.

## MEDICINE.

**The Bacillus of Epidemic Dysentery.** — MM. Chanteuresse and Widal have obtained the following results from a study of five cases of dysentery contracted in hot countries. First of all, they performed an autopsy at Algiers on a soldier who had just died of an acute exacerbation of a dysentery contracted in Tonquin. In the fæcal matters during life, in the walls of the large intestine, in the mesenteric glands, and in the spleen after death, they found a bacillus which is not present in healthy dejections, but which also constantly appeared in the stools of four other dysenteric patients. The lesions in the case of the soldier above mentioned were characteristic of dysentery, and the bacillus was found in masses on the surface of the mucous membrane, in the intestinal walls, between the tubular glands, and lying in these at their terminations. From the mucous membrane, spleen and mesenteric glands they succeeded in obtaining pure cultures of a micro-organism which grew readily on gelatine at the ordinary temperature. The microbe formed a rod rounded at the extremity. Its transverse diameter increases in successive cultures; it stains badly with aniline dyes, and does not liquefy the gelatine, forming a whitish pellicle on the surface which does not touch the sides of the glass. It grew with great rapidity in sterilised water from the Seine. Isolated colonies in gelatine plate cultures at one period of their development assume a characteristic appearance useful in diagnosis. When they are hardly visible to the naked eye, under a lens they appear as a clean spot. A little later they have a yellowish tinge, and appear to be made up of two concentric circles. Later still the yellow colour is lost, and they become whitish and granular. The diameter of these colonies never exceeds that of a lentil. The authors never detected the formation of spores.

The bacilli were given to rabbits by the mouth, by inoculation of the intestine, and by intra-peritoneal injection. When injected by the mouth there were no effects for the first few days, but on killing the animal on the eighth day the stomach was found to be studded with small ulcers about the

size of a lentil. The ascending colon was distended, and contained liquid fæcal matter, with abundance of the injected microbes; its walls were thickened and contained numerous ecchymoses, and the lymphoid follicles were atrophied. When the acidity of the gastric juice was neutralised by administering carbonate of soda before giving the microbe, the gastric lesions were much more pronounced, consisting of large irregular ulcerated surfaces, covered with a pultaceous false membrane resting upon an indurated whitish base. Intra-peritoneal inoculation caused death in from two to three days with pericarditis, peritonitis and pleurisy, with formation of much fibrin. The bacilli were found in the blood and in the fibrinous exudations.

Intra-intestinal inoculation after laparotomy gave the most decisive results. In animals killed at the end of eight days the large intestine was filled with liquid fæcal matter containing the bacillus. The mucous membrane was swollen, ecchymosed and ulcerated. Under the microscope the lesions appeared to be disseminated in patches isolated from each other, and situated most frequently in the lymphoid follicles. The central part of the lesion consisted of a coagulation necrosis, and in the capillaries around were swarms of bacilli similar to those injected: the bacilli also penetrated the mucous membrane along the connective tissue between the tubular glands. The liver contained two or three patches in which the gland-tissue had become yellow. Pure cultures obtained from the intestinal lesions reproduced the bacillus inoculated eight days before. The authors conclude that the presence of the bacillus above described in the intestinal lesions, glands, and spleen of a man dying from an acute attack ot dysentery, its absence in healthy evacuations, and the lesions it produces in the intestine and viscera of rabbits justify the assumption that it is the specific bacillus of dysentery.—*Le Progrès médical*, April 21st, 1888.

**Comparison between the use of Antipyrin and of Salicylate of Soda in painful affections, and especially in those of Rheumatic origin, by Dr. Chas. Bayoux.**—In acute rheumatism salicylate of soda gives excellent results, provided that the kidneys are sound and the nervous system not too excitable: on the other hand, when the patient has albuminuria, or is very nervous, especially if a woman, its use is often attended with inconvenience. In these cases antipyrin may be administered with advantage. In cases of chronic or of muscular rheumatism, and in various neuralgias, the salicylates are ineffectual, while antipyrin

gives excellent results. Generally speaking, antipyrin is better tolerated, is less toxic than salicylate of soda, and has no injurious action on the renal epithelium. The nausea and vertigo that it occasionally produces speedily disappear, whilst the erythema it sometimes gives rise to is of slight intensity and short duration. Accidents can be reduced to a minimum by employing only chemically pure antipyrin, and varying the mode of administration (by giving it in pill, mixture, by hypodermic injection, or by enemata).—*Le Progrès médical*, April 21st, 1888.

**Treatment of Hæmoptysis in Phthisis by Iodoform.**—MM. Chauvin and Jovissenne, of Liège, give fourteen cases in which the administration of iodoform for hæmoptysis was attended with immediate and marked success. In most of the cases the hæmoptysis did not occur in quantity, but in the form of expectoration, more or less abundant, constantly streaked with blood. From their observations they draw the following conclusions:—

(1) Iodoform is a rapid and certain hæmostatic in cases both of severe loss of blood and in sanguineous expectoration.

(2) Relapses are very rare; no case of relapse or of death from hæmoptysis occurring after ten months, although the patients were very poor, and lived in a populous quarter amidst bad hygienic surroundings.

(3) The dose required is small. They gave the drug in pills each containing $\frac{3}{4}$ grain. Three pills in the twenty-four hours were generally sufficient: more than nine were very rarely required. At first they combined the iodoform with tannin, but soon found that the tannin was unnecessary.

(4) Iodoform succeeded where ergotin completely failed, and had the further advantages of not disturbing the digestion, and permitting the patients to continue their occupations.

The manner in which the hæmostatic action of iodoform is produced they hope to discuss in a future paper, but at present have not exactly determined.—*Le Progrès médical*, May 19th, 1888.

**Indications and Contra-Indications for the use of the Contrexeville Waters.**—Dr. Bayard has made the following observations on the action of the Contrexéville waters during twenty years' practice in that place:

The waters possess two properties: the first is called "expulsive" from its action on plain muscular tissue, and especially that of the biliary and urinary passages; the

second, or "alterative," affects the general composition of the blood like other alkalies.

To the first action is to be attributed the expulsion of stones from the bladder that often occurs while the patient is undergoing a course of the waters, and the success attained in incontinence of urine in children, and in vesical catarrh with enfeebled contractile power in the aged.

Its alterative action explains its good effects in gout and diabetes, where it acts by facilitating the excretion of uric acid.

Indications:

(1) Uric acid, phosphatic or oxalic gravel—above all, if there are attacks of renal colic: renal hæmaturia or alkalinity of urine is not a contra-indication.

(2) Vesical catarrh: many of the most remarkable cures brought about by the waters are in cases of this description.

(3) Although successful in acute gout, the waters are more especially valuable in chronic cases.

(4) According to the author's experience, the sugar disappears from the urine in 89 per cent. of cases of diabetes.

(5) Hepatic colic: the best results are obtained in women whom frequent attacks of colic have rendered weak and anæmic.

Contra-indications:

(1) The presence of a stone in the bladder too large to be passed by the urethra.

(2) Complete paralysis of the bladder, with absolute loss of all contractility.

(3) Organic disease of the heart demands the greatest care in the use of the Contrexéville waters.

Finally, the author recommends that the waters should always be taken fasting, since, if taken at meal times, they may fail to produce good effects.—*Gazette des hôpitaux*, March 10th and 12th, 1888.

[The Contrexéville waters approach closely in composition the sulphated lime waters of Bath and Clifton: the great reputation that the latter possessed for cases of diabetes, during the 18th and early part of the 19th centuries, will be remembered.] J. MICHELL CLARKE, M.B.

## LARYNGOLOGY.

**Varix of the Tongue.**—Dr. Manon considers that the condition depends on a gouty or rheumatic diathesis as its predisposing cause: it is rare in infants, but fairly common in barristers, singers, street hawkers, and those addicted to

alcohol. The seat of the disease is behind the circumvallate papillæ.

The symptoms are: a little hindrance to the movements of the organ and to clear speech, dryness of the throat, production of sputum difficult to expel, and which is sometimes pink.

The treatment consists in removal by galvano-cautery or curved scissors.—*Revue mensuelle de Laryngologie*, April, 1888.

[I have just seen a case of early phthisis laryngea in a patient addicted to alcoholic excess, in which, along with much overfilled and varicose veins, there were considerable outgrowths, like small angiomata, on the back of the tongue and stretching down to the epiglottis. The best way to see these is to hold the laryngoscopic mirror higher in the throat than one would do in an ordinary inspection of the larynx.]

**Tuberculosis of the Tonsils.**—Dr. Lublinski finds this to be extremely rare; but since Strassmann, Cornil and Ranvier and Ziegler have found small tubercle follicles in the tonsils of those who have died of phthisis pulmonalis, but who during life gave no sign of any ailment of the tonsils, it is probably not so rare a disease in the hands of pathologists as in those of physicians.

In Lublinski's two cases, the lungs and larynx were invaded, and then ulceration of tonsils took place without the neighbouring structures being affected. The ulcers are like those caused by tubercle attacking a mucous surface; and numerous bacilli were present, and these Lublinski considers of great importance, as otherwise the appearances might be confounded with those of syphilis. The treatment was palliative by means of cocaine, and also iodol was used. The galvano-cautery appeared to relieve one case. The author thinks that the development of new connective tissue conceals the seat of tubercle and so hides it from the clinical observer. It is probable that the infection of the tonsils occurs through the expectoration.—*Revue mensuelle de Laryngologie*, April, 1888.

**The Action of Caustics on the Nasal Mucous Membrane.**—Dr. Francke H. Bosworth explains the action of these substances in hypertrophic rhinitis by referring us to the pathology of the disease, which he believes to be a dilatation of venous sinuses, increased blood-supply, hypernutrition and therefore increase of the intervenous connective tissue.

He states that normally sixteen ounces of clear serum are

daily poured into the nasal cavities from the venous sinuses; if the walls of the vessels are thickened this amount is lessened, and a thick, annoying discharge takes the place of the natural fluid.

Our object in using remedies is to constrict vessels and thus counteract hypertrophy. Caustics cause necrosis of superficial epithelium, and to a very slight degree of the submucosa; they do not affect the deep cavernous layer, but the superficial slough formed compresses the blood-vessels. Now, cocaine causes depletion of blood-vsssels by diminishing their calibre; if, then, we get this effect first and then use a caustic, we shall do more to maintain the vessels in a state of contraction until they can regain their normal tonicity, than if we omit the cocaine. Bosworth considers chromic acid the best caustic to use, because, although temporarily the pain caused by it is just as great as that caused by a mineral acid, it more quickly and surely subsides, does not produce cicatrices, and with care, its action can be easily controlled.—*The Journal of Laryngology*, April, 1888.

**Cocaine as a hæmostatic in Epistaxis and in Nasal Surgery.**—Rualt uses tampons soaked in 20 to 30 per cent. solutions of cocaine, which, in obstinate cases of epistaxis, he allows to remain in the nose two or three hours. In bleeding produced by surgical interference, five or ten minutes are usually enough.—*Revue mensuelle de Laryngologie*, February, 1888.

**The action of Cocaine on Laryngeal Infiltrations, an aid to Diagnosis.**—Baumgarten considers that if an infiltration becomes smaller and paler after cocaine has been applied to it, it is catarrhal; if there is no change, it is more serious.—*Wiener med. Wochenschrift*, No. 44, 1887.

**Pachydermia verrucosa of Larynx.**—Professor Zenker reports a case of the above rare condition: both vocal cords were much thickened, with milk-white colour of the surface which was smooth; on vertical section through the cord, he found long, closely-packed papillæ, which in some cases were branching, and covered by a thick layer of epithelial cells, which presented an even surface; under the papillæ there was an inflammatory small cell-infiltration, the cells of which were quite unlike an epithelial collection.

Zenker considers such a growth as quite innocent.—*Münch. med. Wochenschrift*, No. 32, 1887.

BARCLAY J. BARON, M.B.

# SCRAPS

PICKED UP BY THE ASSISTANT-EDITOR.

**Accommodating.**—"Take a tablespoonful of this mixture after each meal." "But, doctor, it is so very seldom that I can get a meal," replied the poor patient. "Oh, well, in that case, you can take it before each meal," said the kind-hearted M.D.—*The Medical Age.*

**A Narrow Escape.**—Mérimée, referring to M. Viennet of the French Academy, observed, "We must not speak ill of his tragedies. At the siege of Leipsic he had one in his pocket. A cannon-ball ricocheted against his breast; but the tragedy saved him. The missile had not strength to go beyond the third act."

**Very Mortal.**—A Bristol newspaper one day last month, in giving an account of a recent death of which the cause was at first doubtful, said that the doctor had "stated that death probably resulted from typhoid fever and autopsy." The Editor will perhaps be sorry to hear that there is no record of a patient having recovered from the last-named complication.

**Too Capital a Fee.**—The Ameer of Afghanistan suffered, not long ago, from a boil on his neck, and sought relief at the hands of his Court physician. The latter ordered some sort of a salve to bring the boil to a head. Unfortunately, the application caused the august patient considerable pain, and after a night of torture he sent for his physician and had him decapitated. Evidently the physician to the Ameer does not hold a sinecure.—*The Medical Record.*

**How to Collect Bills for Services.**—Under this heading, Dr. C. Pence, of Spencerville, Ohio, writes to *The Medical Standard:* "The physicians of Spencerville and vicinity have combined for protection against delinquent debtors. The plan adopted is as follows: The physicians make out and exchange lists of patients who are delinquent debtors. All agree to refuse medical aid to such delinquents except for cash. The plan has worked like a charm, and many old debts are being paid. Let physicians elsewhere do likewise."

[Those who think that such a plan would be desirable here should organise it.]

**Bright's Disease.**—John Bright was born in 1811. He made a tour of the Holy Land at the age of 24, but did not desire to purchase it, owing to the existence of a flaw in the title. On his return from the Orient he discovered that what was most needed both in Europe and America, was a good, reliable disease for the use of the better classes. The poor and humble were well supplied, but the rich, the aristocratic and patrician statesmen, corned heads and porkists of the two lands languished for a good, reliable disease that poor people could not obtain. So he began to sit up nights and perfect Bright's disease. He gained the prize at the Paris Exposition, and honourable mention at the great Centennial Celebration at Philadelphia, for "meritorious and effective disease for the better classes." Since that time he has been gratified to notice that the very best people, both in his own land and in this, are handling Bright's disease. It has been kept out of the reach of the poor, and to die from this ailment has been regarded as a proud distinction.—*Journal of Reconstructives*, from the *Boston Globe.*

**Scottish Mediæval Medicine.**—The ninth King of Scots, if we may believe the early chroniclers, rendered his reign memorable by the high honour in which he held physicians. It was in Ireland, where he spent years of exile with his father, says Buchanan, that he became familiar with medicine and its practitioners. When settled on the throne of Scotland, he so inspired the courtiers with his medical tastes that the healing art, particularly surgery, became quite a patrician accomplishment, and for centuries afterwards "nemo esset in Scotia illustriore loco natus, qui vulnerum curationem non teneret." Even down to the sixteenth century surgery, especially military surgery, was a *métier* in which the Scottish aristocracy were proficient. The gallant King James IV. pursued, according to Buchanan, the traditional practice of his race and ancestry with much zeal. "Unum e vetusta gentis consuetudine hausit avide, ut vulnera scientissime tractaret; cujus rei peritia toti Scotorum Nobilitati, ut hominibus in armis assidue viventibus, fuerat priscis temporibus communis."—*The Medical and Surgical Reporter.*

**Special Dispensaries.**—The following extract is taken from an article in *The Hospital.* Referring to matters so thoroughly unknown in this neighbourhood, it will be read with interest, as showing the possibilities of private enterprise.

"Free Dispensary for Diseases of the Little Toe,
"—— Street, —— Square.

"In the year 1883, 30,807 persons died of diseases of the little toe. This number, which includes cases of gangrene, pyæmia, phlebitis, and bunion, is exclusive of the very numerous deaths from wasting diseases and cancer of the digit. (See *Registrar-General's Report.*)

"According to the above extract, diseases of the little toe have occasioned more deaths in England than diseases of any other organ, and a comparison of the returns for 1883 with those of previous years shows that these diseases are increasing in a ratio greatly out of proportion to the increasing population.

"*Deaths from Diseases of the Little Toe.*

| Year. | | Year. | | Year. | |
|---|---|---|---|---|---|
| 1874 ... ... | 13,846 | 1877 ... ... | 17,908 | 1880 ... ... | 21,915 |
| 1875 ... ... | 15,401 | 1878 ... ... | 19,634 | 1881 ... ... | 20,940 |
| 1876 ... ... | 15,009 | 1879 ... ... | 20,879 | 1882 ... ... | 24,802 |

1883... ... ... ... ... **30,807.**

"Besides the above number of fatal cases, there is a still greater number of diseases of the little toe not terminating in death, but which give rise to extreme suffering and misery, especially amongst the poorer classes. *This is the only institution specially devoted to the treatment of diseases of the little toe,* and the fact that in less than two years upwards of 10,560 patients (from all parts of England) have been relieved proves that it is a necessity. The employment of the newly-invented instrument (the little-toe scalpel) is a special feature in the institution, and by the aid of this instrument morbid conditions of the digit can be fully exposed and adequateiy treated. Further aid is required to meet the urgent demands caused by the daily increasing number of out-patients. It is likewise essential that a ward should be speedily opened for the reception of the more acute cases. *At least £1,000 is required to establish a ward containing six beds.* For this purpose the Committee have determined to open a separate subscription list. Those who desire to assist in this particular way will please notify that their subscriptions or donations are to go to the 'Ward Fund.' The benevolent are repectfully informed that the very existence of the institution will be jeopardised unless the funds are considerably augmented.

"Jeremiah Diddler, Secretary."